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=> FILE HCAPL

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FILE COVERS 1907 - 8 Aug 2006 VOL 145 ISS 7
FILE LAST UPDATED: 7 Aug 2006 (20060807/ED)

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This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> D QUE L23

L2 18 SEA FILE=REGISTRY ABB=ON (463-79-6/BI OR 105-58-8/BI OR
108-32-7/BI OR 12190-79-3/BI OR 21324-40-3/BI OR 24937-79-9/BI
OR 35363-40-7/BI OR 4437-85-8/BI OR 51729-83-0/BI OR 56525-42-9
/BI OR 616-38-6/BI OR 623-53-0/BI OR 7440-44-0/BI OR 7782-42-5/
BI OR 872-36-6/BI OR 9003-55-8/BI OR 9004-32-4/BI OR 96-49-1/BI
)
L3 1 SEA FILE=REGISTRY ABB=ON 872-36-6
L5 3 SEA FILE=REGISTRY ABB=ON 96-49-1 OR 108-32-7 OR 4437-85-8

L6 1 SEA FILE=REGISTRY ABB=ON L2 AND GRAPHITE
 L7 13 SEA FILE=REGISTRY ABB=ON L2 NOT 1/NR
 L8 6 SEA FILE=REGISTRY ABB=ON L7 AND CARBONATE
 L9 195038 SEA FILE=HCAPLUS ABB=ON L6 OR GRAPHITE
 L10 23919 SEA FILE=HCAPLUS ABB=ON L9(5A) (ANODE? OR ELECTRODE?)
 L11 15787 SEA FILE=HCAPLUS ABB=ON L5
 L12 5886 SEA FILE=HCAPLUS ABB=ON L11(L) ELECTROLYT?
 L13 917 SEA FILE=HCAPLUS ABB=ON L3
 L14 501 SEA FILE=HCAPLUS ABB=ON L13(L) ELECTROLYT?
 L15 81 SEA FILE=HCAPLUS ABB=ON L10 AND L12 AND L14
 L16 81 SEA FILE=HCAPLUS ABB=ON L15 AND ELECTROCHEMICAL?/SC, SX
 L17 81 SEA FILE=HCAPLUS ABB=ON L16 AND BATTER?
 L18 9482 SEA FILE=HCAPLUS ABB=ON L8
 L19 3116 SEA FILE=HCAPLUS ABB=ON L18(L) ELECTROLYT?
 L20 66 SEA FILE=HCAPLUS ABB=ON L17 AND L19
 L22 44 SEA FILE=HCAPLUS ABB=ON L20 AND (1840-2003)/PRY,AY,PY
 L23 44 SEA FILE=HCAPLUS ABB=ON L9 AND L22

*limited by
date*

=> D L23 1-44 BIB ABS IND HITSTR

L23 ANSWER 1 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2005:606347 HCAPLUS
 DN 143:100421
 TI Secondary lithium **batteries** having stable SEI (solid electrolyte interface)
 IN Iwanaga, Masato; Inomata, Hideyuki; Oga, Keisuke; Abe, Hiroshi; Miyoshi, Kazuhiro
 PA Sanyo Electric Co., Ltd., Japan; Ube Industries, Ltd.
 SO Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005190754	A2	20050714	JP 2003-428675	20031225 <--
	WO 2005064735	A1	20050714	WO 2004-JP19328	20041224 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRAI JP 2003-428675 A 20031225 <--

AB The **batteries** employ carbonaceous anodes, and nonaq. electrolyte solns. containing 0.1-3 weight% of vinylene carbonate and 0.1-2 weight% of di(2-propynyl) oxalate (to the total electrolyte solns.). The **batteries** show high initial discharge capacity, excellent charge-discharge cycling performance at high temperature, and inhibit gas generation upon repeated usage.
 IC ICM H01M010-40
 ICS H01M002-02; H01M004-02; H01M004-58
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery** electrolyte soln additive vinylene carbonate;
dipropynyl oxalate additive lithium **battery** electrolyte soln

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(anode; secondary Li **battery** containing carbonaceous anode and
electrolyte solution containing gas-suppressing additives)

IT **Battery** electrolytes
Secondary **batteries**
(secondary Li **battery** containing carbonaceous anode and
electrolyte solution containing gas-suppressing additives)

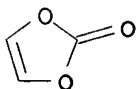
IT 872-36-6, Vinylene carbonate 71573-77-8, Di(2-propynyl) oxalate
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(additive for **electrolyte** solution; secondary Li **battery**
containing carbonaceous anode and **electrolyte** solution containing
gas-suppressing additives)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode; secondary Li **battery** containing carbonaceous
anode and electrolyte solution containing gas-suppressing additives)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
carbonate
RL: DEV (Device component use); USES (Uses)
(in **electrolyte** solution; secondary Li **battery** containing
carbonaceous anode and **electrolyte** solution containing
gas-suppressing additives)

IT 872-36-6, Vinylene carbonate
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(additive for **electrolyte** solution; secondary Li **battery**
containing carbonaceous anode and **electrolyte** solution containing
gas-suppressing additives)

RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode; secondary Li **battery** containing carbonaceous
anode and electrolyte solution containing gas-suppressing additives)

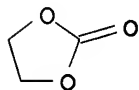
RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
carbonate
RL: DEV (Device component use); USES (Uses)
(in **electrolyte** solution; secondary Li **battery** containing
carbonaceous anode and **electrolyte** solution containing
gas-suppressing additives)

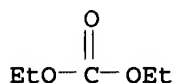
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



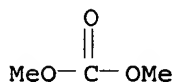
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



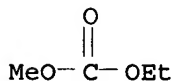
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



L23 ANSWER 2 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:141448 HCAPLUS

DN 142:243601

TI Secondary lithium battery and its nonaqueous electrolyte solution

IN Abe, Koji; Miyoshi, Kazuhiro; Kuwata, Takaaki; Matsumori, Yasuo

PA Ube Industries, Ltd., Japan

SO PCT Int. Appl., 36 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	WO 2005015677	A1	20050217	WO 2004-JP11714	20040809 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,				

EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
SN, TD, TG

PRAI JP 2003-291129 A 20030811 <--

JP 2003-383406 A 20031113 <--

AB The **battery** comprised a cathode, an anode, and a nonaq. electrolyte solution having an electrolyte salt dissolved in a nonaq. solvent mixture; where the cathode is a Li composite oxide containing material, the **anode** is a **graphite** containing material; and the electrolyte solution contains a dialkyl oxalate and a vinylene carbonate and/or 1,3-propane sultone.

IC ICM H01M010-40

ICS H01M004-58; H01M004-02

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** electrolyte additive dialkyl oxalate vinylene carbonate; **battery** electrolyte additive propane sultone

IT **Battery** electrolytes

(electrolyte solns. containing dialkyl oxalates and vinylene carbonate and/or 1,3-propane sultone for secondary lithium **batteries**)

IT Secondary **batteries**

(lithium; electrolyte solns. containing dialkyl oxalates and vinylene carbonate and/or 1,3-propane sultone for secondary lithium **batteries**)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate

105-58-8, Diethyl carbonate 108-32-7, Propylene

carbonate 616-38-6, Dimethyl carbonate 623-53-0,

Methyl ethyl carbonate 7782-42-5, **Graphite**, uses

12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium

oxide (CoLiO2) 14283-07-9, Lithium tetrafluoroborate 21324-40-3,

Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(**electrolyte** solns. containing dialkyl oxalates and vinylene carbonate and/or 1,3-propane sultone for secondary lithium **batteries**)

IT 108-59-8, Dimethyl malonate 553-90-2, Dimethyl oxalate 615-52-1,

Methyl ethyl oxalate 872-36-6, Vinylene carbonate 1120-71-4,

1,3-Propane sultone 2050-60-4, Dibutyl oxalate 5132-19-4 20602-87-3,

Dihexyl oxalate 20760-45-6, Dioctyl oxalate 61764-71-4, Methyl

propargyl carbonate 841302-60-1 841302-61-2 841302-62-3

RL: MOA (Modifier or additive use); USES (Uses)

(**electrolyte** solns. containing dialkyl oxalates and vinylene carbonate and/or 1,3-propane sultone for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 616-38-6, Dimethyl

carbonate 623-53-0, Methyl ethyl carbonate 7782-42-5,

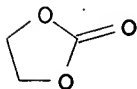
Graphite, uses

RL: DEV (Device component use); USES (Uses)

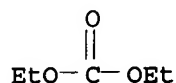
(**electrolyte** solns. containing dialkyl oxalates and vinylene carbonate and/or 1,3-propane sultone for secondary lithium **batteries**)

RN \ 96-49-1 HCAPLUS

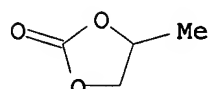
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



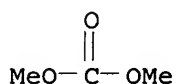
RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



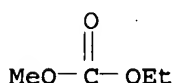
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



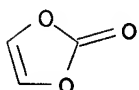
RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

IT 872-36-6, Vinylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing dialkyl oxalates and vinylene carbonate and/or 1,3-propane sultone for secondary lithium batteries)
 RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 3 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:1058778 HCAPLUS

DN 142:41483

TI Nonaqueous electrolytic solution containing aromatic compounds and its use in secondary lithium **battery**

IN Takehara, Masahiro; Shima, Kunihi

PA Mitsubishi Chemical Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004349131	A2	20041209	JP 2003-145311	20030522 <--
PRAI	JP 2003-145311		20030522	<--	
OS	MARPAT 142:41483				

AB The solution contains Li salts dissolved in nonaq. solvents containing R1CR2HA [R1, R2 = (un)substituted alkyl; R1 and R2 may be bonded to form (un)substituted hydrocarbon ring; A = substituted Ph; ≥ 1 of C on m-position to R1CR2H in A has substituted group]. The **battery** using the solution has high charge-discharge efficiency, capacity retention, energy d., and safety in wide temperature region.

IC ICM H01M010-40

ICS H01M004-02; H01M004-38; H01M004-40; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST arom compd nonaq electrolytic soln lithium **battery**; benzene deriv overcharging prevention nonaq **battery** safetyIT Secondary **batteries**

(lithium; nonaq. electrolytic solution containing specific benzene derivs.

for

overcharging prevention in Li **battery**)IT **Battery** electrolytes(nonaq. electrolytic solution containing specific benzene derivs. for overcharging prevention in Li **battery**)

IT 7429-90-5D, Aluminum, compds. 7440-21-3D, Silicon, compds. 7440-31-5D, Tin, compds. 7440-56-4D, Germanium, compds. 7782-42-5, KS 44, uses

RL: DEV (Device component use); USES (Uses)

(anode containing; nonaq. electrolytic solution containing specific benzene derivs. for overcharging prevention in Li **battery**)

IT 110-83-8, Cyclohexene, reactions 615-37-2, 1-Iodo-2-methylbenzene

RL: RCT (Reactant); RACT (Reactant or reagent)

(benzene derivs. from; nonaq. electrolytic solution containing specific benzene derivs. for overcharging prevention in Li **battery**)

IT 12190-79-3, Cobalt lithium oxide (LiCoO₂) 12737-30-3, Cobalt nickel oxide 51845-85-3, Cobalt manganese oxide

RL: DEV (Device component use); USES (Uses)

(cathode containing; nonaq. electrolytic solution containing specific

benzene

derivs. for overcharging prevention in Li **battery**)

IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte; nonaq. electrolytic solution containing specific benzene

derivs.

for overcharging prevention in Li **battery**)

IT 872-36-6, Vinylene carbonate

RL: DEV (Device component use); USES (Uses)
 (film former, solution containing; nonaq. **electrolytic** solution containing
 specific benzene derivs. for overcharging prevention in Li
battery)

IT 1717-82-4P, 1-Cyclohexyl-2-fluorobenzene 4501-35-3P 91766-85-7P
 RL: DEV (Device component use); IMF (Industrial manufacture); MOA
 (Modifier or additive use); PREP (Preparation); USES (Uses)
 (nonaq. **electrolytic** solution containing specific benzene derivs. for
 overcharging prevention in Li **battery**)

IT 803745-27-9
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (nonaq. **electrolytic** solution containing specific benzene derivs. for
 overcharging prevention in Li **battery**)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-29-2, γ -Valerolactone
 108-32-7, Propylene carbonate 542-28-9, δ -Valerolactone
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
 carbonate 4437-85-8, Butylene carbonate
 RL: DEV (Device component use); USES (Uses)

(solvent; nonaq. **electrolytic** solution containing specific benzene
 derivs. for overcharging prevention in Li **battery**)

IT 7782-42-5, KS 44, uses
 RL: DEV (Device component use); USES (Uses)
 (anode containing; nonaq. **electrolytic** solution containing specific
 benzene derivs. for overcharging prevention in Li **battery**)

RN 7782-42-5 HCAPLUS

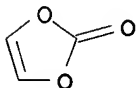
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

IT 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (film former, solution containing; nonaq. **electrolytic** solution containing
 specific benzene derivs. for overcharging prevention in Li
battery)

RN 872-36-6 HCAPLUS

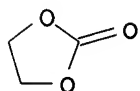
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



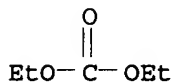
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 616-38-6, Dimethyl
 carbonate 623-53-0, Ethyl methyl carbonate 4437-85-8,
 Butylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (solvent; nonaq. **electrolytic** solution containing specific benzene
 derivs. for overcharging prevention in Li **battery**)

RN 96-49-1 HCAPLUS

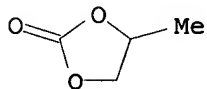
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



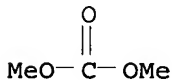
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



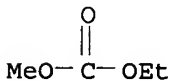
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



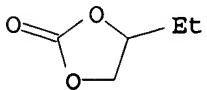
RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



L23 ANSWER 4 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:876869 HCAPLUS
DN 141:368345
TI Secondary nonaqueous electrolyte battery
IN Tajiri, Hiroyuki; Kuriyama, Kazuya; Yada, Shizukuni
PA Osaka Gas Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 24 pp.
CODEN: JKXXAF

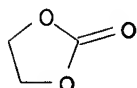
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004296106	A2	20041021	JP 2003-83127	20030325 <--
PRAI	JP 2003-83127		20030325 <--		
AB	A ≤12 mm thick secondary battery , having an energy capacity ≥30 W.h and a volume energy d. ≥180 W.h/L, uses $\text{Li}(\text{Ni}+\text{Mn}+\text{Co})\text{O}_2$ [M = Co, Al, or Fe; $1 \leq a \leq 1.1$, $0.3 \leq b \leq 0.5$, $0.3 \leq c \leq 0.5$, $d \leq 0.4$, $b \geq c$, $(b+c+d) = 1$] as cathode active mass; graphite having $d_{002} \leq 0.34\text{nm}$, average particle size 15-40 μm , and tap d. ≥0.8 g/cm ³ coated with amorphous carbon having interplanar spacing ≥0.34 nm for anode active mass, and an electrolyte solvent containing ethylene carbonate, MeEtCO ₃ , and 0.1-5% vinylene carbonate.				
IC	ICM H01M010-40 ICS C01B031-04; H01M004-02; H01M004-58				
CC	52-2 (Electrochemical , Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery electrode electrolyte solvent compn; lithium manganese nickel oxide battery cathode; amorphous carbon coated graphite battery anode; ethylene carbonate ethyl methyl carbonate vinylene carbonate battery electrolyte				
IT	Battery anodes (amorphous carbon coated graphite anode active mass for thin secondary lithium batteries)				
IT	Carbonaceous materials (technological products) RL: MOA (Modifier or additive use); USES (Uses) (amorphous carbon coated graphite anode active mass for thin secondary lithium batteries)				
IT	Battery cathodes (compns. of substituted lithium manganese nickel oxide cathode active mass for thin secondary lithium batteries)				
IT	Battery electrolytes (electrolyte solvent mixts. containing vinylene carbonate for thin secondary lithium batteries)				
IT	Secondary batteries (lithium; compns. of electrode active mass and electrolyte solvent mixts. thin secondary lithium batteries)				
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); USES (Uses) (amorphous carbon coated graphite anode active mass for thin secondary lithium batteries)				
IT	193215-96-2, Cobalt lithium manganese nickel oxide ($\text{Co}_0.2\text{LiMn}_0.4\text{Ni}_0.4\text{O}_2$) 346417-97-8, Cobalt lithium manganese nickel oxide ($\text{Co}_0.33\text{LiMn}_0.33\text{Ni}_0.33\text{O}_2$) RL: DEV (Device component use); USES (Uses) (compns. of substituted lithium manganese nickel oxide cathode active mass for thin secondary lithium batteries)				
IT	96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (electrolyte solvent mixts. containing vinylene carbonate for thin secondary lithium batteries)				
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); USES (Uses) (amorphous carbon coated graphite anode active mass				

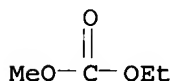
for thin secondary lithium batteries)
 RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

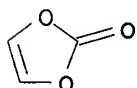
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl
 carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solvent mixts. containing vinylene carbonate for
 thin secondary lithium batteries)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 5 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:857824 HCAPLUS
 DN 141:352740
 TI Surfactant-treated lithium battery electrodes for improved solid
 electrolyte interface during cycling
 IN Morris, Robert Scott; Dixon, Brian Gilbert
 PA Phoenix Innovations, Inc., USA
 SO PCT Int. Appl., 21 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004088769	A2	20041014	WO 2004-US3750	20040209 <--
	WO 2004088769	A3	20050203		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,				

LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
 NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
 TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
 BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,
 ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,
 TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1597783 A2 20051123 EP 2004-709487 20040209 <--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

PRAI US 2003-447500P P 20030219 <--
 WO 2004-US3750 W 20040209

AB Novel lithium **batteries** with improved interfacial contact and decreased impedance between the electrolyte and the electrodes, resulting in improved safety (especially to prevent overcharging during cycling) are characterized by having one or both surfactant-modified electrodes, a porous separator, and an electrolyte. The anode is especially a carbon **anode** (e.g., **graphite**, mesocarbon microbeads, buckyballs, and multiwall and single-walled carbon nanotubes) that is coated with a fluorinated, nonionic, or cationic surfactant; the cathode is especially a lithium metal oxide (e.g., LiNiCoO₂, LiCoO₂, LiNO₂, and LiMnO₂) coated with a fluorinated, dimeric, cationic, or nonionic surfactant. All the surfactants have an incorporated reactive end group of various reactive functionality (e.g., vinyl, allyl, acrylate, propargyl, diene, polyene, etc). The electrolytes include nonaq. organic electrolytes and can incorporate added lithium salts.

IC ICM H01M

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 46

ST solid electrolyte interface lithium **battery** electrode
 surfactant; surfactant treated anode cathode electrolyte interface
battery safety; carbon anode surfactant lithium **battery**
 electrolyte interface

IT Polysiloxanes, uses

RL: DEV (Device component use); NUU (Other use, unclassified); PEP
 (Physical, engineering or chemical process); PYP (Physical process); PROC
 (Process); USES (Uses)
 (Silwet L 7510, surfactants; surfactant-treated lithium **battery**
 electrodes for improved solid electrolyte interface during cycling)

IT Surfactants

(anionic; surfactant-treated lithium **battery** electrodes for
 improved solid electrolyte interface during cycling)

IT Fullerenes

RL: TEM (Technical or engineered material use); USES (Uses)
 (anodes; surfactant-treated lithium **battery** electrodes for
 improved solid electrolyte interface during cycling)

IT Nanotubes

(carbon, single-walled and multiwalled; surfactant-treated lithium
battery electrodes for improved solid electrolyte interface
 during cycling)

IT Surfactants

(cationic; surfactant-treated lithium **battery** electrodes for
 improved solid electrolyte interface during cycling)

IT Polysiloxanes, uses

RL: DEV (Device component use); NUU (Other use, unclassified); PEP
 (Physical, engineering or chemical process); PYP (Physical process); PROC
 (Process); USES (Uses)
 (di-Me, 3-hydroxypropyl Me, ethers with polyethylene glycol mono-Me
 ether, Silwet L 7602 and Silwet L 7622; surfactant-treated lithium

battery electrodes for improved solid electrolyte interface during cycling)

- IT Polysiloxanes, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (di-Me, 3-hydroxypropyl Me, ethers with polyethylene-polypropylene glycol mono-Me ether, Silwet L 7001 and Silwet L 7605; surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT Polysiloxanes, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (di-Me, 3-hydroxypropyl Me, ethoxylated propoxylated, Silwet L 7280 and Silwet L 7607; surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT Polysiloxanes, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (di-Me, 3-hydroxypropyl Me, ethoxylated, Silwet L 7608; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT Polyoxyalkylenes, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (di-Me, Me hydrogen polysiloxane-, Silwet L 7600, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT Polysiloxanes, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (di-Me, Me hydrogen, polyoxyalkylene-, Silwet L 7600, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT Polysiloxanes, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (di-Me, hydroxyalkyl Me, ethers with polyalkylene glycol mono-C1-3-alkyl ether, Silwet L 7500, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT Polysiloxanes, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (di-Me, hydroxypropyl Me, ethers with polyoxyalkylene glycol mono-C1-3-alkyl ether, Silwet L 7604, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT Polyphosphates
 RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
 (electrolyte containing; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT Glycols, uses
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP

(Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(ethers, alkyl and aryl ethers, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Surfactants
(fluorosurfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Ethers, uses
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(glycol, alkyl and aryl ethers, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Safety
(in **battery** cycling; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Microspheres
(mesocarbon; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Surfactants
(nonionic; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Polysiloxanes, uses
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polyoxyalkylene-, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polysiloxane-, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Carboxylic acids, uses
Sulfonic acids, uses
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(salts, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT **Battery** anodes
Battery cathodes
Battery electrodes
Electrode-electrolyte interface
Surfactants
(surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
(surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT Phosphonium compounds
Polyoxyarylenes
Quaternary ammonium compounds, uses
RL: DEV (Device component use); NUU (Other use, unclassified); PEP

- (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 9002-92-0
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Brij 30 and Brij 35, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 9004-95-9
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Brij 52 and Brij 58, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 9005-00-9
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Brij 700, Brij 72, Brij 76; surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 9004-98-2
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Brij 92, Brij 97, Brij 98; surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 112-34-5
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Dowanol DB, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 111-77-3
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Dowanol DM, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 34590-94-8
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Dowanol DPM, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 88917-22-0
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(Dowanol DPMA, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)
- IT 35884-42-5
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(Dowanol DPNB, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 29911-27-1
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol DPNP, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 111-76-2
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol EB, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 122-99-6
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol EPH, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 1320-67-8
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol PM, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 29387-86-8
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol PNB, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 30136-13-1
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol PNP, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 41593-38-8
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol PPH, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 25498-49-1
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol TPM, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 55934-93-5
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (Dowanol TPNB, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 9002-93-1
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(Triton X 100 and Triton X 114, surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (anodes; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 12031-65-1, Lithium nickel oxide (LiNiO₂) 12162-79-7, Lithium manganese oxide (LiMnO₂) 12190-79-3, Cobalt lithium oxide (CoLiO₂) 162004-08-2, Cobalt lithium nickel oxide ((Co,Li,Ni)O₂)
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (cathodes; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 123-91-1, 1,4-Dioxane, uses 126-33-0, Sulfolane 512-56-1, Trimethyl phosphate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 756-79-6, Dimethyl methyl phosphonate 872-36-6, Vinylene carbonate 7791-03-9, Lithium perchlorate 13598-36-2D, Phosphonic acid, polymers 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 25322-68-3, Polyethylene glycol 25322-69-4, Polypropylene glycol 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 132843-44-8 288570-49-0
 RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
 (electrolyte containing; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

IT 57-09-0, Cetyltrimethylammonium bromide 112-02-7, Cetyltrimethylammonium chloride 151-21-3, Sodium dodecylsulfate, uses 7664-38-2D, Phosphoric acid, salts 13598-36-2D, Phosphonic acid, derivs., salts 27306-78-1, Silwet L 77 67674-67-3 166949-53-7 193487-14-8, Silwet 560 296241-24-2, Silwet 806
 RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (surfactants; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

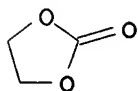
IT 7782-42-5, Graphite, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (anodes; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

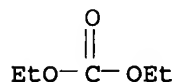
C

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
 (electrolyte containing; surfactant-treated lithium **battery** electrodes for improved solid electrolyte interface during cycling)

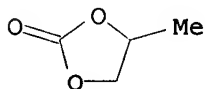
RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



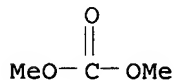
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



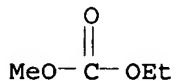
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



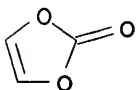
RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 6 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:310417 HCAPLUS
DN 140:342128
TI Secondary lithium battery
IN Azuma, Takeshi
PA Hitachi Maxell Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004119350	A2	20040415	JP 2002-285154	20020930 <--
	CN 1497763	A	20040519	CN 2003-154434	20030928 <--
	US 2005074670	A1	20050407	US 2003-671737	20030929 <--
PRAI	JP 2002-285154	A	20020930	<--	

AB The **battery** uses a carbonaceous material having d002 ≤ 0.3360 nm, $L_c \geq 70$ nm, and $(I_{1350}/I_{1580}) = 0.01-0.3$ (I_{1350} and I_{1580} are the intensities of peaks at 1350/cm and 15809/cm on its Ar laser induced raman spectrum) for its anode, and uses an electrolyte solution containing 0.5-5% vinylene carbonate or its derivative The carbonaceous material

is preferably **graphite**.

IC ICM H01M004-58

ICS H01M004-02; H01M004-62; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** anode electrolyte soln compn; **graphite** cryst structure secondary lithium **battery** anode; vinylene carbonate electrolyte soln secondary lithium **battery**

IT **Battery** electrolytes

(electrolyte solns. containing vinylene carbonate for secondary lithium **batteries**)

IT **Battery** anodes

(**graphite** with controlled crystalline structure and argon laser induced raman spectrum for secondary lithium **battery** anodes)

IT Secondary **batteries**

(lithium; vinylene carbonate containing electrolyte solns. and **graphite** anodes for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing vinylene carbonate for secondary lithium **batteries**)

IT 7782-42-5, **Graphite**, uses

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(**graphite** with controlled crystalline structure and argon laser induced raman spectrum for secondary lithium **battery** anodes)

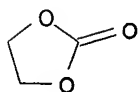
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing vinylene carbonate for secondary lithium **batteries**)

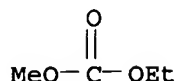
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

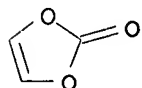


RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (graphite with controlled crystalline structure and argon laser
 induced raman spectrum for secondary lithium battery anodes)
 RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

L23 ANSWER 7 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:291770 HCAPLUS

DN 140:306784

TI Secondary nonaqueous electrolyte batteries and nonaqueous
 electrolyte solutions containing nonaromatic hydrocarbons

IN Kotado, Minoru; Shima, Noriko; Kinoshita, Shinichi

PA Mitsubishi Chemical Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004111359	A2	20040408	JP 2003-181702	20030625 <--
PRAI	JP 2002-214991	A	20020724	<--	

OS MARPAT 140:306784

AB The secondary batteries have Li-intercalatable anodes, cathodes,
 and electrolyte solns. containing nonaq. solvents and Li salts, wherein the
 anodes contain graphite, the anode layer have
 d. ≥ 1.45 g/cm³, and the nonaq. solvents contain 0.01-5 weight% aliphatic
 (fluoro)hydrocarbons $\text{CaH}_{2a+2-b}\text{F}_b$ (a, b = integer; a = 7-20; a > b \geq
 0) and/or nonarom. (fluoro)hydrocarbons $\text{C}_n\text{H}_m\text{F}_l$ (n, m, l = integer; n =
 6-20; m \geq n > l \geq 0). Secondary Li batteries
 using the nonaq. electrolyte solns. show high capacity, good storage
 stability, long cycle life, and low generation of gases.

ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)

ST lithium battery nonaq electrolyte fluoro hydrocarbon;
 graphite anode nonaq electrolyte lithium battery

IT Hydrocarbons, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (fluoro; secondary Li **batteries** using nonaq. electrolyte solns. containing nonarom. (fluoro)hydrocarbons)

IT Secondary **batteries**
 (lithium; secondary Li **batteries** using nonaq. electrolyte solns. containing nonarom. (fluoro)hydrocarbons)

IT **Battery** anodes
Battery electrolytes
 (secondary Li **batteries** using nonaq. electrolyte solns. containing nonarom. (fluoro)hydrocarbons)

IT Carbonates, uses
 RL: DEV (Device component use); USES (Uses)
 (secondary Li **batteries** using nonaq. electrolyte solns. containing nonarom. (fluoro)hydrocarbons)

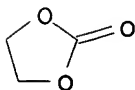
IT Hydrocarbons, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (secondary Li **batteries** using nonaq. electrolyte solns. containing nonarom. (fluoro)hydrocarbons)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate 7782-42-5, **Graphite**, uses 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (secondary Li **batteries** using nonaq. electrolyte solns. containing nonarom. (fluoro)hydrocarbons)

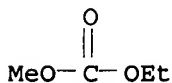
IT 92-51-3, Dicyclohexyl 112-40-3, Dodecane 142-82-5, Heptane, uses 372-46-3, Fluorocyclohexane 661-11-0, 1-Fluoroheptane 3178-22-1, tert-Butylcyclohexane
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (secondary Li **batteries** using nonaq. electrolyte solns. containing nonarom. (fluoro)hydrocarbons)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 7782-42-5, **Graphite**, uses
 RL: DEV (Device component use); USES (Uses)
 (secondary Li **batteries** using nonaq. electrolyte solns. containing nonarom. (fluoro)hydrocarbons)

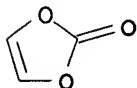
RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

L23 ANSWER 8 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:272172 HCAPLUS
 DN 140:306748
 TI Secondary nonaqueous electrolyte battery
 IN Sonoda, Kumiko; Matsui, Toru; Koshina, Shigeru
 PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 14 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004103545	A2	20040402	JP 2003-13858	20030122 <--
PRAI	JP 2002-205690	A	20020715	<--	

AB The battery has a separator between a Li-intercalating cathode and a Li-intercalating anode, and a nonaq. electrolyte solution, containing an electrolyte salt dissolved in a solvent mixture which comprises ethylene carbonate (EC), a linear carbonate ester (LCE), a cyclic carbonate ester (CCE), and a ≥ 1 C-C unsatd. bond containing cyclic carbonate ester; where the content of the CCE and the C-C unsatd. bond containing CCE are resp. 0.5-5 % of the total weight (100 weight parts) of the EC and the LCE; and the mixing ratio of EC to LCE is 15:85-40:60.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery electrolyte solvent carbonate ester ethylene carbonate

IT Battery electrolytes
 Secondary batteries

(electrolyte solvents containing ethylene carbonate and carbonate esters with controlled amount for secondary battery)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; electrolyte solvents containing ethylene carbonate and carbonate esters with controlled amount for secondary battery)

IT 52627-24-4, Cobalt lithium oxide

RL: DEV (Device component use); USES (Uses)

(cathode; electrolyte solvents containing ethylene carbonate and carbonate esters with controlled amount for secondary battery)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate

105-58-8, Diethyl carbonate 108-29-2, γ -Valerolactone

502-44-3, ϵ -Caprolactone 542-28-9, δ -Valerolactone

616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 1679-47-6, α -Methyl- γ -butyrolactone 21324-40-3, Lithium hexafluorophosphate 53627-36-4 85554-61-6, Furanone

RL: DEV (Device component use); USES (Uses)

(electrolyte solvents containing ethylene carbonate and carbonate esters with controlled amount for secondary battery)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; electrolyte solvents containing ethylene carbonate and carbonate esters with controlled amount for secondary battery)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

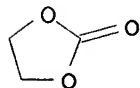
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate

RL: DEV (Device component use); USES (Uses)

(electrolyte solvents containing ethylene carbonate and carbonate esters with controlled amount for secondary battery)

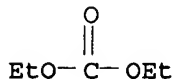
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



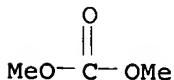
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



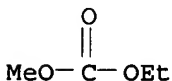
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

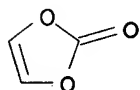


RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 9 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:269719 HCAPLUS
 DN 140:290016
 TI Nonaqueous electrolyte secondary battery
 IN Yanagida, Katsunori; Inoue, Takao; Nakanishi, Naoya; Funahashi, Atsuhiko;
 Nohma, Toshiyuki
 PA Japan
 SO U.S. Pat. Appl. Publ., 7 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

applicants

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004062993	A1	20040401	US 2003-673350	20030930 <--
	JP 2004119326	A2	20040415	JP 2002-284740	20020930 <--
	KR 2004028557	A	20040403	KR 2003-67262	20030929 <--
	CN 1497764	A	20040519	CN 2003-159586	20030929 <--
PRAI	JP 2002-284740	A	20020930	<--	

AB A nonaq. electrolyte secondary battery includes a pos. electrode, a neg. electrode comprising a graphite as a neg. electrode active material, and a nonaq. electrolyte including at least a saturated cyclic carbonic ester and containing a cyclic carbonic ester having a carbon-carbon double bond such that, when a content of the cyclic carbonic ester having a carbon-carbon double bond is x (g), a content of the graphite in the neg. electrode is B (g), a sp. surface area of the graphite is A (m²/g), a size of the crystallite of the graphite in a direction of the c axis is L_c, and a size of the crystallite of the graphite in a direction of the a axis is L_a, a condition expressed by: $0.05+10^{-2} \leq x/[A + B + 2L_c/(2L_c+L_a)] \leq 3+10^{-2}$ is satisfied.

IC ICM H01M004-58
 ICS H01M010-40

INCL 429231800; 429331000; 429332000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery nonaq electrolyte secondary

IT Battery anodes

Battery electrolytes

Secondary batteries

(nonaq. electrolyte secondary battery)

IT Fluoropolymers, uses

Styrene-butadiene rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte secondary battery)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 463-79-6D, Carbonic acid, ester,

chain 463-79-6D, Carbonic acid, ester, cyclic 616-38-6,

Dimethyl carbonate 623-53-0, Ethyl methyl carbonate

872-36-6, Vinylene carbonate 4437-85-8, Butylene carbonate 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 35363-40-7, Ethyl propyl carbonate 51729-83-0, Methyl isopropyl carbonate 56525-42-9, Methyl propyl carbonate
 RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte secondary battery)

IT 7440-44-0, Carbon, uses 9004-32-4, Carboxymethyl cellulose sodium salt 24937-79-9, PvdF

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte secondary battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber, nonaq. electrolyte secondary battery)

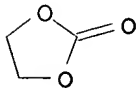
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 4437-85-8, Butylene carbonate 7782-42-5, Graphite, uses 35363-40-7, Ethyl propyl carbonate 51729-83-0, Methyl isopropyl carbonate 56525-42-9, Methyl propyl carbonate

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte secondary battery)

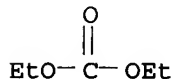
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



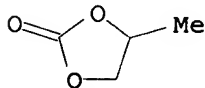
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



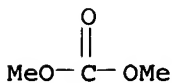
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

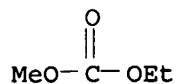


RN 616-38-6 HCAPLUS

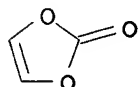
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



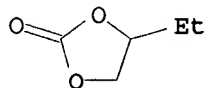
RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



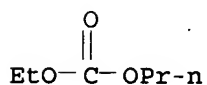
RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



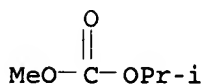
RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

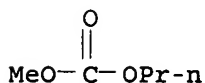
RN 35363-40-7 HCAPLUS
 CN Carbonic acid, ethyl propyl ester (7CI, 9CI) (CA INDEX NAME)



RN 51729-83-0 HCAPLUS
 CN Carbonic acid, methyl 1-methylethyl ester (9CI) (CA INDEX NAME)



RN 56525-42-9 HCAPLUS
 CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)



L23 ANSWER 10 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:220640 HCAPLUS

DN 140:273543

TI Nonaqueous electrolyte secondary cell

IN Sato, Asako; Matsumoto, Koichi; Kaido, Hideki; Sekino, Masahiro; Yajima, Akira; Hashimoto, Minoru; Oguchi, Masayuki; Takahagi, Yukio

PA Kabushiki Kaisha Toshiba, Japan

SO PCT Int. Appl., 50 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004023590	A1	20040818	WO 2003-JP11105	20030829 <--
	W: CN, JP, KR, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
PRAI	JP 2002-250743	A	20020829	<--	

AB The disclosed nonaq. electrolyte secondary cell comprises a pos. electrode, a neg. electrode containing a carbonaceous substance capable of absorbing/releasing lithium ions, and a nonaq. electrolyte containing a nonaq. solvent. The nonaq. solvent contains a sultone compound having at least one double bond in a ring. The specific area of the carbonaceous substance measured by the BET method ranges from 0.3 m²/g to 4 m²/g. The interplanar spacing d₀₀₂ measured by powder X-ray diffraction is below 0.3365 nm. No peaks in the range from 42.8° to 44.0° and in the range from 45.5° to 46.6° of the angle of diffraction 2θ are observed when the carbonaceous substance is measured by X-ray diffraction using the CuKα line. The secondary cell contains a **graphite** material whose x-ray diffraction intensity (I) and peak areas (S) satisfying the following formulas; $1 \leq I(101)/I(100) \leq 1.2$ and $3.7 \leq S(101)/S(100) \leq 5$ (101) and (100) denote the diffraction surfaces.

IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary battery carbonatious anode nonaq electrolyte

IT **Battery anodes**(artificial **graphite** for nonaq. electrolyte type secondary cells)IT **Secondary batteries**(lithium; solvent composition and **anode** containing **graphite** for)IT 7782-42-5, **Graphite**, uses

RL: DEV (Device component use); USES (Uses)

(artificial; nonaq. electrolyte type lithium secondary **battery** anode containing)

IT 78-42-2, Trioctyl phosphate 96-48-0, γ-Butyrolactone

96-49-1, Ethylene carbonate 108-32-7, Propylene

carbonate 623-53-0, Methyl ethyl carbonate 872-36-6,

Vinylene carbonate 21806-61-1

RL: TEM (Technical or engineered material use); USES (Uses)

(nonaq. **electrolyte** type lithium secondary **battery** solvent composition containing)

IT 105-58-8, Diethyl carbonate

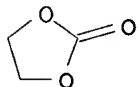
RL: TEM (Technical or engineered material use); USES (Uses)

(nonaq. electrolyte type lithium secondary battery solvent composition contg.nonaq. electrolyte type lithium secondary battery solvent composition containing)

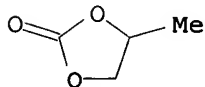
IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (artificial; nonaq. electrolyte type lithium secondary battery anode containing)
 RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

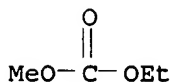
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 623-53-0, Methyl ethyl carbonate 872-36-6, Vinylene carbonate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolyte type lithium secondary battery solvent composition containing)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



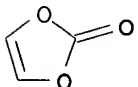
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)

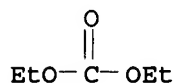


RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 105-58-8, Diethyl carbonate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolyte type lithium secondary battery solvent composition contg.nonaq. electrolyte type lithium

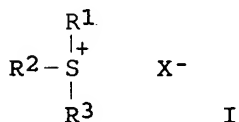
secondary battery solvent composition containing)
 RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 11 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:200996 HCAPLUS
 DN 140:238466
 TI Electrolyte solution for the secondary battery and the
 battery using the solution
 IN Utsuki, Koji; Hasegawa, Etsuo
 PA NEC Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 18 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004079335	A2	20040311	JP 2002-237938	20020819 <--
PRAI	JP 2002-237938		20020819	<--	
GI					



AB The solution contains an aprotic solvent and a sulfonium salt I [R1, R2 and R3 = (substituted) Ph, (substituted) alkyl, or (substituted) cycloalkyl group; R1 and R2 may be condensed with each other to form a ring; and X- = anion]. The battery has a cathode, an anode, and the above electrolyte solution

IC ICM H01M010-40
 ICS H01M004-02; H01M004-40; H01M004-48; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte sulfonium salt

IT Battery electrolytes
 (electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

IT Secondary batteries
 (lithium; electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)

(amorphous; electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (anode; electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4)
 RL: DEV (Device component use); USES (Uses)
 (cathode; electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 21324-40-3, Lithium
 hexafluorophosphate 132843-44-8
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

IT 872-36-6, Vinylene carbonate 1129-93-7 22743-99-3 57835-99-1
 65585-20-8 121901-94-8 127855-15-6 231955-29-6 668994-68-1
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

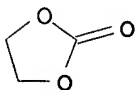
IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (anode; electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

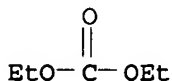
C

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing sulfonium salts in aprotic solvents for secondary lithium batteries)

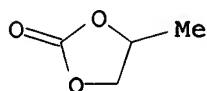
RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



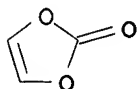
RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



IT 872-36-6, Vinylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing sulfonium salts in aprotic
 solvents for secondary lithium batteries)
 RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 12 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:139826 HCAPLUS

DN 140:184697

TI Secondary nonaqueous battery and electronic device using the
 battery

IN Kita, Fusaji; Higashiguchi, Masaharu; Sakata, Hideo

PA Hitachi Maxell Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004055253	A2	20040219	JP 2002-209221	20020718 <--
PRAI	JP 2002-209221		20020718	<--	

AB The battery has a cathode, an anode, and an electrolyte solution;
 where the electrolyte solution contains 0.5-15 % ionic compound, having an
 alkyl group bond to an aromatic ring; and 1-10000 ppm aromatic amine, sulfide,
 phosphite, and/or quinone. The device has the above battery;
 where the battery is charged at a current of ≥ 1 C.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)

ST electronic device secondary battery electrolyte arom ionic
 compd; battery electrolyte arom amine sulfide phosphite quinone

IT Battery electrolytes

Secondary batteries

(electrolyte solns. containing aromatic ionic compds. and aromatic amine,
 sulfide, phosphite, and/or quinone for secondary batteries)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; secondary batteries containing aromatic ionic
 compds. and aromatic amine, sulfide, phosphite, and/or quinone in
 electrolyte solns. for electronic devices)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2)

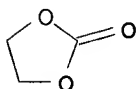
RL: DEV (Device component use); USES (Uses)

(cathode; secondary batteries containing aromatic ionic compds. and
 aromatic amine, sulfide, phosphite, and/or quinone in electrolyte solns.
 for electronic devices)

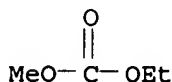
- IT 96-49-1, Ethylene carbonate 135-88-6, Phenyl- β -naphthylamine 462-06-6, Fluorobenzene 623-53-0, Methyl ethyl carbonate 827-52-1, Cyclohexyl benzene 1120-71-4, 1,3-Propane sultone 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing aromatic ionic compds. and aromatic amine, sulfide, phosphite, and/or quinone for secondary batteries)
- IT 101-02-0, Triphenyl phosphite 139-66-2, Diphenyl sulfide 872-36-6, Vinylene carbonate 903-19-5 1126-80-3, Butyl phenyl sulfide 7434-44-8, Butyl Diphenyl phosphite 35735-32-1 52066-84-9 132843-44-8
 RL: DEV (Device component use); USES (Uses)
 (secondary batteries containing aromatic ionic compds. and aromatic amine, sulfide, phosphite, and/or quinone in electrolyte solns. for electronic devices)
- IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (anode; secondary batteries containing aromatic ionic compds. and aromatic amine, sulfide, phosphite, and/or quinone in electrolyte solns. for electronic devices)
- RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

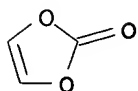
- IT 96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing aromatic ionic compds. and aromatic amine, sulfide, phosphite, and/or quinone for secondary batteries)
- RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



- RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



- IT 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (secondary batteries containing aromatic ionic compds. and aromatic amine, sulfide, phosphite, and/or quinone in electrolyte solns. for electronic devices)
- RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 13 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:139821 HCAPLUS

DN 140:202393

TI Secondary nonaqueous electrolyte battery

IN Sasaki, Takeshi

PA Japan Storage Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004055230	A2	20040219	JP 2002-208587	20020717 <--
PRAI	JP 2002-208587		20020717	<--	

AB The battery has a cathode comprising a Li containing composite oxide active mass, an anode containing an anode active mass, and a nonaq. electrolyte solution containing vinylene carbonate; where the electrolyte solution

contains ≤ 100 ppm polymethylol having a repeating unit
 $-\text{[CH(OH)CH(OH)]}-$.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery electrolyte vinylene carbonate polymethylol

IT Battery electrolytes

Secondary batteries

(electrolyte solns. containing polymethylol with controlled concentration for secondary batteries)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode active mass; electrolyte solns. containing polymethylol with controlled concentration for secondary batteries)

IT 12190-79-3, Cobalt lithium oxide (ColiO2)

RL: DEV (Device component use); USES (Uses)

(cathode active mass; electrolyte solns. containing polymethylol with controlled concentration for secondary batteries)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 21324-40-3, Lithium hexafluorophosphate 25323-67-5

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing polymethylol with controlled concentration for secondary batteries)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

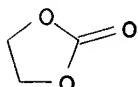
(anode active mass; electrolyte solns. containing polymethylol with controlled concentration for secondary batteries)

RN 7782-42-5 HCAPLUS

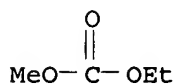
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

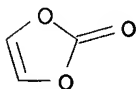
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing polymethylol with controlled concentration for secondary batteries)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)

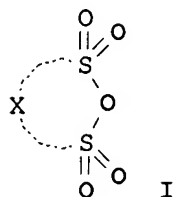


RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 14 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:57903 HCAPLUS
 DN 140:131080
 TI Electrolyte solution for the secondary battery and the battery using the solution
 IN Utsuki, Koji; Mori, Mitsuhiro
 PA NEC Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 24 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004022336	A2	20040122	JP 2002-175648	20020617 <--
PRAI	JP 2002-175648		20020617	<--	
GI					



AB The electrolyte solution has a sulfonic acid anhydride I [X = (substituted) C2-4 alkylene, (substituted) C2-4 alkenyl, or (substituted) aromatic ring] in an aprotic solvent. The battery has a cathode, an anode, and the above electrolyte solution

IC ICM H01M010-40
ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery electrolyte sulfonic acid anhydride

IT Battery electrolytes
Secondary batteries
(electrolyte solns. containing sulfonic acid anhydrides for secondary batteries)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(amorphous; anode; electrolyte solns. containing sulfonic acid anhydrides for secondary batteries)

IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode; electrolyte solns. containing sulfonic acid anhydrides for secondary batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 12057-17-9, Lithium manganese oxide (LiMn2O4) 21324-40-3, Lithium hexafluorophosphate 33356-82-0
132843-44-8
RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing sulfonic acid anhydrides for secondary batteries)

IT 872-36-6, Vinylene carbonate 4378-87-4 76076-58-9 82727-20-6
259194-36-0 259194-40-6 634598-36-0 634598-37-1 648922-25-2
648922-26-3 648922-27-4
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte solns. containing sulfonic acid anhydrides for secondary batteries)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode; electrolyte solns. containing sulfonic acid anhydrides for secondary batteries)

RN 7782-42-5 HCAPLUS

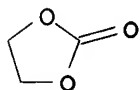
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

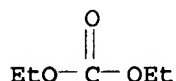
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate
RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing sulfonic acid anhydrides for

secondary batteries)

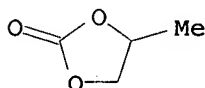
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



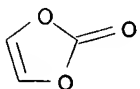
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



IT 872-36-6, Vinylene carbonate
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte solns. containing sulfonic acid anhydrides for secondary batteries)
RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 15 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:57872 HCAPLUS

DN 140:114216

TI Secondary nonaqueous electrolyte battery

IN Nakagawa, Hiroe; Fujimoto, Yuki

PA Yuasa Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004022174	A2	20040122	JP 2002-170992	20020612 <--
PRAI	JP 2002-170992		20020612		

AB The battery has a cathode, an anode, and a nonaq. electrolyte solution; where the electrolyte solution contains ≥ 1 cyclic carbonate having π -bond and ≥ 1 acid anhydride.

IC ICM H01M010-40
ICS H01M002-02; H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** electrolyte cyclic carbonate acid anhydride

IT **Battery** electrolytes
(electrolyte solns. having π -bond containing cyclic carbonates and acid anhydrides for secondary lithium **batteries**)

IT Secondary **batteries**
(lithium; electrolyte solns. having π -bond containing cyclic carbonates and acid anhydrides for secondary lithium **batteries**)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(**anode**; electrolyte solns. having π -bond containing cyclic carbonates and acid anhydrides for secondary lithium **batteries**)

IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
RL: DEV (Device component use); USES (Uses)
(cathode; electrolyte solns. having π -bond containing cyclic carbonates and acid anhydrides for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 872-36-6, Vinylene carbonate 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solns. having π -bond containing cyclic carbonates and acid anhydrides for secondary lithium **batteries**)

IT 108-24-7, Acetic anhydride 108-30-5, Succinic anhydride, uses 4427-96-7, Vinyl ethylene carbonate 21240-34-6
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte solns. having π -bond containing cyclic carbonates and acid anhydrides for secondary lithium **batteries**)

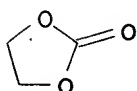
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(**anode**; electrolyte solns. having π -bond containing cyclic carbonates and acid anhydrides for secondary lithium **batteries**)

RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

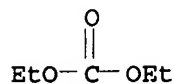
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 872-36-6, Vinylene carbonate
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solns. having π -bond containing cyclic carbonates and acid anhydrides for secondary lithium **batteries**)

RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



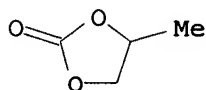
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



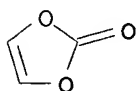
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 16 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:37471 HCAPLUS

DN 140:79827

TI Secondary nonaqueous electrolyte **battery** and the electrolyte solution

IN Kotado, Minoru; Kinoshita, Shinichi

PA Mitsubishi Chemical Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004014465	A2	20040115	JP 2002-170443	20020611 <--
PRAI	JP 2002-170443		20020611		<--

AB The **battery** has a Li-intercalating cathode, a Li-intercalating anode, and an electrolyte solution comprising a nonaq. solvent mixture and a Li salt; where the solvent mixture contains 0.01-8 % C>8 cyclic carboxylate compound

IC ICM H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)ST secondary lithium **battery** electrolyte nonaq solvent cyclic carboxylate compdIT **Battery** electrolytes

(electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)

IT Secondary **batteries**

(lithium; electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)

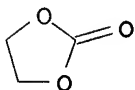
IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

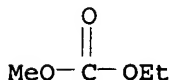
- (**anode**; electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)
- IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: DEV (Device component use); USES (Uses)
 (cathode; electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)
- IT 14283-07-9, Lithium tetrafluoroborate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte salt; electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)
- IT 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)
- IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 623-53-0, Ethyl methyl carbonate 4427-96-7, Vinyl ethylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solvent mixture; electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)
- IT 104-67-6, γ -Undecalactone 872-36-6, Vinylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solvent mixture; electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)
- IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (**anode**; electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)
- RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

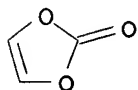
- IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solvent mixture; electrolyte solns. containing cyclic carboxylate compds. in solvent mixts. for secondary lithium **batteries**)
- RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



- RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 872-36-6, Vinylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solvent mixture; electrolyte solns.
 containing cyclic carboxylate compds. in solvent mixts. for secondary
 lithium batteries)
 RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 17 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:3214 HCAPLUS

DN 140:44762

TI Secondary nonaqueous electrolyte battery

IN Fujiwara, Kazuyasu; Takahashi, Masatoshi; Iwanaga, Masato

PA Sanyo Electric Co., Ltd., Japan

SO PCT Int. Appl., 30 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004001889	A1	20031231	WO 2003-JP7944	20030623 <--
	W: CN, KR, US				
	JP 2004030991	A2	20040129	JP 2002-182128	20020621 <--
	CN 1663071	A	20050831	CN 2003-814595	20030623 <--
	US 2006166102	A1	20060727	US 2004-509756	20040930 <--
PRAI	JP 2002-182128	A	20020621	<--	
	WO 2003-JP7944	W	20030623	<--	

AB The battery has a Li-intercalating cathode, a Li-intercalating anode, and a nonaq. electrolyte solution containing a nonaq. solvent mixture and

an electrolyte salt; where the solvent mixture contains a cycloalkyl benzene derivative and an alkylbenzene derivative having a quaternary carbon atom bonded

directly to the benzene ring and not having any cycloalkyl groups bonded directly to the benzene ring.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery electrolyte solvent cycloalkyl benzene alkylbenzene deriv

IT Battery electrolytes

(nonaq. solvent mixts. containing cycloalkyl benzene derivs. and alkylbenzene derivs. for secondary battery electrolytes)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; nonaq. solvent mixts. containing cycloalkyl benzene derivs. and alkylbenzene derivs. for secondary battery electrolytes)

IT 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte salt; nonaq. solvent mixts. containing cycloalkyl benzene

derivs. and alkylbenzene derivs. for secondary battery electrolytes)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: DEV (Device component use); USES (Uses)
 (nonaq. solvent mixts. containing cycloalkyl benzene derivs. and alkylbenzene derivs. for secondary battery electrolytes)

IT 827-52-1, Cyclohexyl benzene 872-36-6, Vinylene carbonate 2049-95-8, tert-Amyl benzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. solvent mixts. containing cycloalkyl benzene derivs. and alkylbenzene derivs. for secondary battery electrolytes)

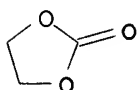
IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (anode; nonaq. solvent mixts. containing cycloalkyl benzene derivs. and alkylbenzene derivs. for secondary battery electrolytes)

RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

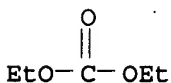
C

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. solvent mixts. containing cycloalkyl benzene derivs. and alkylbenzene derivs. for secondary battery electrolytes)

RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

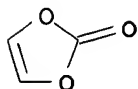


RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



IT 872-36-6, Vinylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. solvent mixts. containing cycloalkyl benzene derivs. and alkylbenzene derivs. for secondary battery electrolytes)

RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 18 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:991842 HCAPLUS

DN 140:29537

TI Electrolyte solution for secondary lithium **battery** and the **battery** using the solution

IN Utsugi, Koji; Mori, Mitsuhiro

PA NEC Corporation, Japan

SO PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003105268	A1	20031218	WO 2003-JP7418	20030611 <--
	W: CA, CN, KR				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	JP 2004014459	A2	20040115	JP 2002-170228	20020611 <--
	CN 1613165	A	20050504	CN 2003-802029	20030611 <--
	US 2005100795	A1	20050512	US 2003-726013	20031203 <--
PRAI	JP 2002-170228	A	20020611	<--	
	WO 2003-JP7418	W	20030611	<--	
AB	The electrolyte solution comprises at least imide anions, transition metal ions and a compound having a sulfonyl group, in an aprotic solvent. The battery using the electrolyte solution has long cycle life and high safety.				
IC	ICM H01M010-40				
	ICS H01M004-02				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery electrolyte aprotic solvent; battery electrolyte imide transition metal sulfonyl compd				
IT	Battery electrolytes (electrolyte solns. containing sulfonyl compds., transition metal ions and imide anions for secondary lithium batteries)				
IT	Secondary batteries (lithium; electrolyte solns. containing sulfonyl compds., transition metal ions and imide anions for secondary lithium batteries)				
IT	7440-44-0, Carbon, uses RL: DEV (Device component use); USES (Uses) (amorphous; anode; electrolyte solns. containing sulfonyl compds., transition metal ions and imide anions for secondary lithium batteries)				
IT	7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 68848-64-6 RL: DEV (Device component use); USES (Uses) (anode; electrolyte solns. containing sulfonyl compds., transition metal ions and imide anions for secondary lithium batteries)				
IT	12057-17-9, Lithium manganese oxide (LiMn2O4)				

RL: DEV (Device component use); USES (Uses)
 (cathode; electrolyte solns. containing sulfonyl compds., transition metal
 ions and imide anions for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 872-36-6, Vinylene
 carbonate 1120-71-4, 1,3-Propane sultone 132843-44-8 259194-36-0
 259194-40-6 634598-36-0 634598-37-1

RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing sulfonyl compds., transition metal
 ions and imide anions for secondary lithium **batteries**)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)
 (anode; electrolyte solns. containing sulfonyl compds.,
 transition metal ions and imide anions for secondary lithium
batteries)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

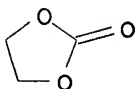
C

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 872-36-6, Vinylene
 carbonate

RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing sulfonyl compds., transition metal
 ions and imide anions for secondary lithium **batteries**)

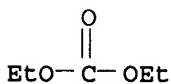
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



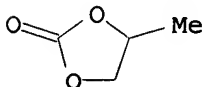
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



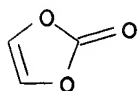
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 19 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:910404 HCAPLUS

DN 139:398021

TI Charge method for secondary nonaqueous electrolyte **battery**

IN Wada, Hiroshi

PA Japan Storage Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003331927	A2	20031121	JP 2002-139793	20020515 <---
PRAI	JP 2002-139793		20020515 <---		

AB The method is carried out by charging a secondary nonaq. electrolyte **battery**, equipped with a Li containing transition metal oxide cathode, a carbonaceous anode, and a nonaq. electrolyte solution containing ethylene carbonate and vinylene carbonate as solvent and LiPF₆ as electrolyte salt, at a constant current; where the d. of the charging current at a part facing the cathode and anode is controlled below 4 mA/cm².

IC ICM H01M010-44

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary nonaq electrolyte secondary **battery** charge method

IT Electron density

(charge methods with controlled constant c.d. for secondary nonaq. electrolyte **battery**)

IT Secondary **batteries**

(lithium; charge methods with controlled constant c.d. for secondary nonaq. electrolyte **battery**)

IT 362666-83-9, Aluminum lithium manganese oxide (Al_{0.1}Li_{1.1}Mn_{1.8}O₄)

RL: DEV (Device component use); USES (Uses)

(cathode; charge methods with controlled constant c.d. for secondary nonaq. electrolyte **battery**)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate

RL: DEV (Device component use); USES (Uses)

(charge methods with controlled constant c.d. for secondary nonaq. electrolyte **battery**)

IT 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte salt; charge methods with controlled constant c.d. for secondary nonaq. electrolyte **battery**)

IT 105-58-8, Diethyl carbonate 872-36-6, Vinylene carbonate

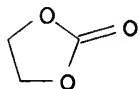
4427-96-7, Vinyl ethylene carbonate

RL: DEV (Device component use); USES (Uses)

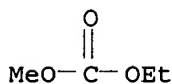
(electrolyte solvent; charge methods with controlled constant c.d. for secondary nonaq. electrolyte **battery**)

IT 7782-42-5, Graphite, uses

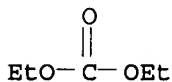
RL: DEV (Device component use); USES (Uses)
 (synthetic, anode; charge methods with controlled constant c.d.
 for secondary nonaq. electrolyte battery)
 IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl
 carbonate
 RL: DEV (Device component use); USES (Uses)
 (charge methods with controlled constant c.d. for secondary nonaq.
 electrolyte battery)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



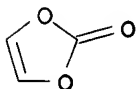
RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 105-58-8, Diethyl carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solvent; charge methods with controlled constant
 c.d. for secondary nonaq. electrolyte battery)
 RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (synthetic, anode; charge methods with controlled constant c.d.
 for secondary nonaq. electrolyte battery)
 RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

L23 ANSWER 20 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:532926 HCAPLUS

DN 139:103757

TI Secondary nonaqueous electrolyte **battery**

IN Yamaguchi, Akira; Ojima, Hideaki; Segawa, Ken; Fukushima, Yuzuru

PA Sony Corporation, Japan

SO PCT Int. Appl., 49 pp.

CODEN: PIXXD2

DT Patent

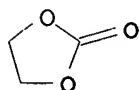
LA Japanese

FAN.CNT 1

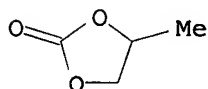
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003056653	A1	20030710	WO 2002-JP13700	20021226 <--
	W: CN, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR				
	JP 2003197259	A2	20030711	JP 2001-397676	20011227 <--
	CN 1618141	A	20050518	CN 2002-807158	20021226 <--
	US 2004081891	A1	20040429	US 2003-469142	20030827 <--
PRAI	JP 2001-397676	A	20011227	<--	
	WO 2002-JP13700	W	20021226	<--	
AB	The battery has a cathode capable of electrochem. doping/dedoping lithium, an anode capable of electrochem. doping/dedoping lithium, and a nonfluxed nonaq. electrolyte or a gel electrolyte obtained by mixing or dissolving a polymer compound in a low-viscosity compound and interposed between the 2 electrodes; where the low-viscosity compound contains an unsatd. carbonate and/or a cyclic lactone compound				
IC	ICM H01M010-40				
	ICS H01M002-02				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery nonaq polymer electrolyte solvent;				
	battery electrolyte solvent unsatd carbonate cyclic lactone compd				
IT	7782-42-5, Graphite, uses				
	RL: DEV (Device component use); USES (Uses)				
	(anode; nonaq. electrolyte solns. containing unsatd. carbonates cyclic lactone compds. for secondary lithium batteries)				
IT	12190-79-3, Cobalt lithium oxide (CoLiO2)				
	RL: DEV (Device component use); USES (Uses)				
	(cathode; nonaq. electrolyte solns. containing unsatd. carbonates cyclic lactone compds. for secondary lithium batteries)				
IT	96-49-1, Ethylene carbonate 108-29-2, γ -Valerolactone				
	108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 21324-40-3, Lithium hexafluorophosphate 33689-28-0, 1,2-Cyclobutanedione				
	RL: DEV (Device component use); USES (Uses)				
	(nonaq. electrolyte solns. containing unsatd. carbonates cyclic lactone compds. for secondary lithium batteries)				
IT	7782-42-5, Graphite, uses				
	RL: DEV (Device component use); USES (Uses)				
	(anode; nonaq. electrolyte solns. containing unsatd. carbonates cyclic lactone compds. for secondary lithium batteries)				
RN	7782-42-5 HCAPLUS				
CN	Graphite (8CI, 9CI) (CA INDEX NAME)				

C

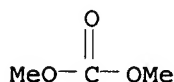
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte solns. containing unsatd. carbonates cyclic lactone compds. for secondary lithium batteries)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



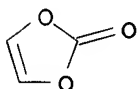
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 21 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2003:532919 HCAPLUS
 DN 139:103755
 TI Secondary nonaqueous electrolyte battery
 IN Sano, Hideki; Sugafuji, Masaya; Yamamoto, Norihiro; Kitagawa, Masaki; Kato, Kiyomi; Matsuno, Hiroshi; Nunome, Jun; Kawatate, Yutaka
 PA Matsushita Electric Industrial Co., Ltd., Japan
 SO PCT Int. Appl., 40 pp.
 CODEN: PIXXD2
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI WO 2003056644 A1 20030710 WO 2002-JP5818 20020611 <--
W: CN, KR, US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE, TR

JP 2003197172 A2 20030711 JP 2001-393417 20011226 <--
CN 1526175 A 20040901 CN 2002-808559 20020611 <--
US 2005118510 A1 20050602 US 2003-467398 20031211 <--

PRAI JP 2001-393417 A 20011226 <--
WO 2002-JP5818 W 20020611 <--

AB The **battery** has an electrode group, containing a separator between an anode and a cathode, and a nonaq. electrolyte in a **battery** case; where the separator is made of a polyolefin resin and has ≥ 1 layer comprising a polypropylene resin which contains. an antioxidant agent having m.p. $\geq 60^\circ$, and the polypropylene resin layer is connected to the cathode.

IC ICM H01M002-16
ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery** separator polyolefin polypropylene resin antioxidant agent

IT Secondary **batteries**
(lithium; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

IT Secondary **battery** separators
(polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

IT 119-47-1, 2,2'-Methylene bis(4-methyl-6-t-butylphenol) 36443-68-2
68407-88-5 95895-56-0 107603-06-5
RL: DEV (Device component use); USES (Uses)
(antioxidant agent; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
RL: DEV (Device component use); USES (Uses)
(cathode; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
RL: DEV (Device component use); USES (Uses)
(electrolyte; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

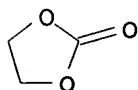
IT 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 80693-00-1D, cyclic 90498-90-1
RL: DEV (Device component use); USES (Uses)
(polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

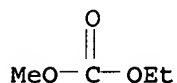
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(synthetic; anode; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
RL: DEV (Device component use); USES (Uses)
(electrolyte; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium **batteries**)

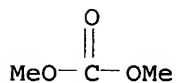
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



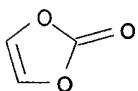
RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium batteries)
RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(synthetic; anode; polyolefin separators containing antioxidant agents with controlled m.p. for secondary lithium batteries)
RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 22 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:454665 HCAPLUS
DN 139:24131
TI Secondary lithium battery
IN Okochi, Masaya; Kawatate, Yutaka; Tanaka, Ryoichi; Inoue, Kaoru

PA Matsushita Electric Industrial Co., Ltd., Japan

SO PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003049216	A1	20030612	WO 2002-JP12283	20021125 <--
	W: CN, JP, KR, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
	CN 1592978	A	20050309	CN 2002-806437	20021125 <--
	TW 580777	B	20040321	TW 2002-91135200	20021204 <--
	US 2004048158	A1	20040311	US 2003-470761	20030731 <--
PRAI	JP 2001-373271	A	20011206	<--	
	WO 2002-JP12283	W	20021125	<--	
AB	The battery has a cathode containing an active mass and a binder, an anode, and a nonaq. electrolyte solution; where the cathode active mass comprises a Li-containing composite oxide: $\text{Li}_a(\text{Co}_{1-x-y}\text{Mg}_x\text{Mn}_y)\text{bO}_c$ ($\text{M} = \text{Ni}, \text{Mn}$ and/or Al ; $a = 0-1.05$; $x = 0.005-0.025$; $y = 0-0.25$; $b = 0.85-1.1$; and $c = 1.8-2.1$).				
IC	ICM H01M004-58				
	ICS H01M004-02; H01M004-62; H01M010-40				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	lithium secondary battery cathode lithium cobalt magnesium oxide compn				
IT	Battery cathodes				
	(compns. of lithium cobalt magnesium oxides in cathodes for secondary lithium batteries)				
IT	Secondary batteries				
	(lithium; compns. of lithium cobalt magnesium oxides in cathodes for secondary lithium batteries)				
IT	7782-42-5, Graphite, uses				
	RL: DEV (Device component use); USES (Uses)				
	(anode; compns. of lithium cobalt magnesium oxides in cathodes for secondary lithium batteries)				
IT	12190-79-3, Cobalt lithium oxide (CoLiO_2) 144419-56-7, Cobalt lithium magnesium oxide ($\text{Co}_{0.95}\text{LiMg}_{0.05}\text{O}_2$) 198213-69-3, Cobalt lithium magnesium oxide ($\text{Co}_{0.99}\text{LiMg}_{0.01}\text{O}_2$) 198213-70-6, Cobalt lithium magnesium oxide ($\text{Co}_{0.98}\text{LiMg}_{0.02}\text{O}_2$) 198213-71-7, Cobalt lithium magnesium oxide ($\text{Co}_{0.97}\text{LiMg}_{0.03}\text{O}_2$) 372491-79-7, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.05}\text{Co}_{0.94}\text{LiMg}_{0.01}\text{O}_2$) 536976-96-2, Cobalt lithium magnesium nickel oxide ($\text{Co}_{0.93}\text{LiMg}_{0.02}\text{Ni}_{0.05}\text{O}_2$) 536976-97-3, Cobalt lithium magnesium nickel oxide ($\text{Co}_{0.88}\text{LiMg}_{0.02}\text{Ni}_{0.10}\text{O}_2$) 536976-98-4, Cobalt lithium magnesium nickel oxide ($\text{Co}_{0.78}\text{LiMg}_{0.02}\text{Ni}_{0.20}\text{O}_2$) 536976-99-5, Cobalt lithium magnesium nickel oxide ($\text{Co}_{0.73}\text{LiMg}_{0.02}\text{Ni}_{0.25}\text{O}_2$) 536977-00-1, Cobalt lithium magnesium nickel oxide ($\text{Co}_{0.68}\text{LiMg}_{0.02}\text{Ni}_{0.30}\text{O}_2$) 536977-01-2, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.05}\text{Co}_{0.93}\text{LiMg}_{0.02}\text{O}_2$) 536977-02-3, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.15}\text{Co}_{0.83}\text{LiMg}_{0.02}\text{O}_2$) 536977-03-4, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.25}\text{Co}_{0.73}\text{LiMg}_{0.02}\text{O}_2$) 536977-04-5, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.3}\text{Co}_{0.68}\text{LiMg}_{0.02}\text{O}_2$) 536977-05-6, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.93}\text{LiMg}_{0.02}\text{Mn}_{0.05}\text{O}_2$) 536977-06-7, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.83}\text{LiMg}_{0.02}\text{Mn}_{0.15}\text{O}_2$) 536977-07-8, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.73}\text{LiMg}_{0.02}\text{Mn}_{0.25}\text{O}_2$) 536977-08-9, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.68}\text{LiMg}_{0.02}\text{Mn}_{0.30}\text{O}_2$) 536977-09-0, Cobalt lithium magnesium nickel oxide ($\text{Co}_{0.94}\text{LiMg}_{0.01}\text{Ni}_{0.05}\text{O}_2$) 536977-10-3, Cobalt lithium				

magnesium nickel oxide (Co0.89LiMg0.01Ni0.102) 536977-11-4, Cobalt lithium magnesium nickel oxide (Co0.79LiMg0.01Ni0.202) 536977-12-5, Cobalt lithium magnesium nickel oxide (Co0.74LiMg0.01Ni0.2502) 536977-13-6, Cobalt lithium magnesium nickel oxide (Co0.69LiMg0.01Ni0.302) 536977-14-7, Aluminum cobalt lithium magnesium oxide (Al0.15Co0.84LiMg0.0102) 536977-15-8, Aluminum cobalt lithium magnesium oxide (Al0.25Co0.74LiMg0.0102) 536977-17-0, Aluminum cobalt lithium magnesium oxide (Al0.3Co0.69LiMg0.0102) 536977-18-1, Cobalt lithium magnesium manganese oxide (Co0.94LiMg0.01Mn0.0502) 536977-19-2, Cobalt lithium magnesium manganese oxide (Co0.84LiMg0.01Mn0.1502) 536977-20-5, Cobalt lithium magnesium manganese oxide (Co0.74LiMg0.01Mn0.2502) 536977-21-6, Cobalt lithium magnesium manganese oxide (Co0.69LiMg0.01Mn0.302)

RL: DEV (Device component use); USES (Uses)
(comps. of lithium cobalt magnesium oxides in cathodes for secondary lithium batteries)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate

RL: DEV (Device component use); USES (Uses)
(electrolyte solvent; comps. of lithium cobalt magnesium oxides in cathodes for secondary lithium batteries)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)
(anode; comps. of lithium cobalt magnesium oxides in cathodes for secondary lithium batteries)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

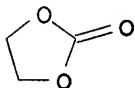
C

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate

RL: DEV (Device component use); USES (Uses)
(electrolyte solvent; comps. of lithium cobalt magnesium oxides in cathodes for secondary lithium batteries)

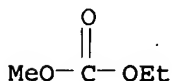
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



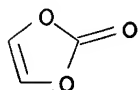
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 23 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:437555 HCAPLUS

DN 139:263213

TI A comparative study on the effect of electrolyte/additives on the performance of ICP383562 Li-ion polymer (soft-pack) cells

AU Contestabile, M.; Morselli, M.; Paraventi, R.; Neat, R. J.

CS Ion Energy Resources, SpA, Bazzano (BO), 40053, Italy

SO Journal of Power Sources (2003), 119-121, 943-947

CODEN: JPSODZ; ISSN: 0378-7753

PB Elsevier Science B.V.

DT Journal

LA English

AB Two electrolyte additives (i.e. vinylene carbonate and organic borates), previously reported by several researchers to show enhanced performance in laboratory-scale Li-ion cells, were studied in the com. ICP383562 Li-ion polymer

(soft-pack) cells. The objective is to examine how these performance enhancements translate to a com. product. The performance characteristics analyzed in the comparative testing include rate capability, temperature performance, cycle life and abuse (overcharge) resistance. Both additives demonstrate improved cycle life performance; organic borates also exhibit enhanced rate capability and low-temperature performance. This study also highlights that the choice of the basic electrolyte composition is essential to achieve a balanced cell performance.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 76

ST electrolyte additive Li ion polymer secondary battery borate carbonate; elec discharge capacity overcharging safety cycling lifetime impedance spectra

IT Safety

(against battery overcharging; comparative study on effect of electrolyte/additives on performance of ICP383562 Li-ion polymer (soft-pack) cells)

IT Battery electrolytes

Polymer electrolytes

(comparative study on effect of electrolyte/additives on performance of ICP383562 Li-ion polymer (soft-pack) cells)

IT Secondary batteries

(lithium; comparative study on effect of electrolyte/additives on performance of ICP383562 Li-ion polymer (soft-pack) cells)

IT Borates

RL: DEV (Device component use); USES (Uses)

(organic, electrolyte additive; comparative study on effect of electrolyte/additives on performance of ICP383562 Li-ion polymer (soft-pack) cells)

IT 7439-93-2, Lithium, uses

RL: DEV (Device component use); USES (Uses)

(comparative study on effect of electrolyte/additives on performance of ICP383562 Li-ion polymer (soft-pack) cells)

IT 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide (CoLiO2)

RL: DEV (Device component use); USES (Uses)
 (electrode; comparative study on effect of
 electrolyte/additives on performance of ICP383562 Li-ion polymer
 (soft-pack) cells)

IT 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte additive; comparative study on effect of
 electrolyte/additives on performance of ICP383562 Li-ion
 polymer (soft-pack) cells)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 616-38-6, Dimethyl carbonate 21324-40-3, Lithium
 hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; comparative study on effect of
 electrolyte/additives on performance of ICP383562 Li-ion
 polymer (soft-pack) cells)

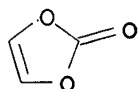
IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (electrode; comparative study on effect of
 electrolyte/additives on performance of ICP383562 Li-ion polymer
 (soft-pack) cells)

RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

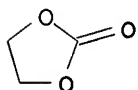
IT 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte additive; comparative study on effect of
 electrolyte/additives on performance of ICP383562 Li-ion
 polymer (soft-pack) cells)

RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)

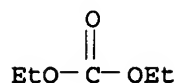


IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 616-38-6, Dimethyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; comparative study on effect of
 electrolyte/additives on performance of ICP383562 Li-ion
 polymer (soft-pack) cells)

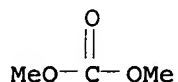
RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



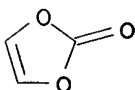
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 24 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2003:437471 HCAPLUS
 DN 139:367349
 TI Electrode-solution interactions in Li-ion **batteries**: a short
 summary and new insights
 AU Aurbach, D.
 CS Department of Chemistry, Bar-Ilan University, Ramat-Gan, 52900, Israel
 SO Journal of Power Sources (2003), 119-121, 497-503
 CODEN: JPSODZ; ISSN: 0378-7753
 PB Elsevier Science B.V.
 DT Journal
 LA English
 AB A discussion of selected surface phenomena related to Li-ion
batteries. Data from in situ XRD, in situ AFM, SEM, and
 electrochem. measurements of **graphite electrodes**
 composed of different types of **graphite particles** (in terms of
 morphol. and 3-dimensional structure) allows description of failure
 mechanisms of **graphite electrodes**, which involve
 deactivation by insulating surface films that surround cracked particles.
 Apparently the performance of the cathodes is to a large extent
 surface-film controlled. Hence, aging of Li-ion **batteries**
 relates mostly to surface phenomena that increase the impedance of the
 electrodes, especially at elevated temps. Attempts to improve the performance
 of Li-ion **batteries** by introduction of new salts and reactive
 additives are presented. The impact of temps. up to 80° is also
 discussed.
 CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
 Technology)
 Section cross-reference(s): 72
 ST anode cathode electrolyte interaction lithium ion **battery**
 IT Fluoropolymers, uses
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical,
 engineering or chemical process); PYP (Physical process); PROC (Process);
 USES (Uses)
 (binder; electrode-electrolyte interactions in Li-ion **batteries**
)
 IT Carbon black, uses
 RL: DEV (Device component use); USES (Uses)
 (conductive, cathode containing; electrode-electrolyte interactions in
 Li-ion **batteries**)
 IT **Battery anodes**
Battery cathodes

Battery electrolytes

(electrode-electrolyte interactions in Li-ion batteries)

- IT 24937-79-9, PVDF
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (binder; electrode-electrolyte interactions in Li-ion batteries)
- IT 12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (cathode; electrode-electrolyte interactions in Li-ion batteries)
- IT 872-36-6, Vinylene carbonate 4525-33-1, Dimethyl pyrocarbonate 161589-07-7
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte additive; electrode-electrolyte interactions in Li-ion batteries)
- IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (electrolyte containing; electrode-electrolyte interactions in Li-ion batteries)
- IT 7664-39-3, Hydrogen fluoride, processes
 RL: CPS (Chemical process); OCU (Occurrence, unclassified); PEP (Physical, engineering or chemical process); OCCU (Occurrence); PROC (Process)
 (electrolyte containing; electrode-electrolyte interactions in Li-ion batteries)
- IT 21324-40-3, Lithium hexafluorophosphate (LiPF₆) 29935-35-1, Lithium hexafluoro arsenate (LiAsF₆) 33454-82-9, Lithium triflate
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (electrolyte; electrode-electrolyte interactions in Li-ion batteries)
- IT 7782-42-5, Graphite, uses
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (flakes, anode; electrode-electrolyte interactions in Li-ion batteries)
- IT 872-36-6, Vinylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte additive; electrode-electrolyte interactions in Li-ion batteries)
- RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



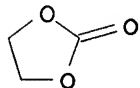
- IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(electrolyte containing; electrode-electrolyte interactions in Li-ion batteries)

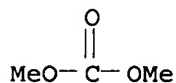
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



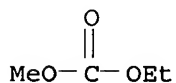
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 7782-42-5, Graphite, uses

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(flakes, anode; electrode-electrolyte interactions in Li-ion batteries)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 25 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:353882 HCAPLUS

DN 138:371695

TI Nonaqueous electrolyte solution and Secondary battery using the electrolyte

IN Hinohara, Akio; Hayashi, Takeshi; Ishida, Tatsuaki; Hirano, Kazuo

PA Mitsui Chemicals Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

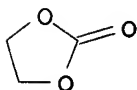
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003132946	A2	20030509	JP 2001-326630	20011024 <--
PRAI	JP 2001-326630		20011024	<--	
AB	The electrolyte solution contains a borate ester of the formula B(OR1)(OR2)(OR3) (R1-3 = H, metal, or organic group), a nonaq. solvent mixture, and an electrolyte salt. The battery has a Li-intercalating anode; a cathode., containing a Li transition metal composite oxide, a conductive polymer material and a carbonaceous material; and the above electrolyte solution				
IC	ICM H01M010-40 ICS H01M004-02; H01M004-58				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	secondary battery nonaq electrolyte borate ester				
IT	Battery electrolytes Secondary batteries (non. electrolyte solns. containing borate esters for secondary lithium batteries)				
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); USES (Uses) (anode; non. electrolyte solns. containing borate esters for secondary lithium batteries)				
IT	96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl carbonate 12190-79-3, Cobalt lithium oxide (CoLiO2) 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (non. electrolyte solns. containing borate esters for secondary lithium batteries)				
IT	688-74-4, Tributyl borate 872-36-6, Vinylene carbonate 1120-71-4 14945-31-4, 2-Sulfobenzoic acid anhydride 34577-43-0 518336-38-4 RL: MOA (Modifier or additive use); USES (Uses) (non. electrolyte solns. containing borate esters for secondary lithium batteries)				
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); USES (Uses) (anode; non. electrolyte solns. containing borate esters for secondary lithium batteries)				
RN	7782-42-5 HCAPLUS				
CN	Graphite (8CI, 9CI) (CA INDEX NAME)				

C

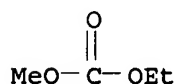
IT 96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl carbonate
RL: DEV (Device component use); USES (Uses)
(non. electrolyte solns. containing borate esters for secondary lithium batteries)

RN 96-49-1 HCAPLUS

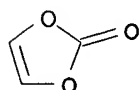
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 872-36-6, Vinylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (non. **electrolyte** solns. containing borate esters for secondary lithium **batteries**)
 RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 26 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2003:335472 HCAPLUS
 DN 138:341110
 TI Nonaqueous electrolyte solution and secondary nonaqueous electrolyte **battery**
 IN Sekino, Masahiro; Sato, Asako; Momma, Jun; Oguchi, Masayuki
 PA Kabushiki Kaisha Toshiba, Japan
 SO PCT Int. Appl., 80 pp.
 CODEN: PIXXD2
 DT Patent
 LA Japanese
 FAN. CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003036752	A1	20030501	WO 2002-JP11160	20021028 <--
	W: CN, KR, US				
	RW: DE, FR, GB				
	JP 2003203675	A2	20030718	JP 2002-313051	20021028 <--
	EP 1439596	A1	20040721	EP 2002-770276	20021028 <--
	R: DE, FR, GB				
	CN 1703799	A	20051130	CN 2002-821206	20021028 <--
	US 2003198871	A1	20031023	US 2003-355304	20030131 <--
	US 6998194	B2	20060214		
PRAI	JP 2001-329950	A	20011026	<--	
	WO 2002-JP11160	W	20021028	<--	
AB	The electrolyte solution has an electrolyte dissolved in a nonaq. solvent mixture, where the solvent mixture comprises ethylene carbonate (EC), propylene carbonate (PC), γ -butyrolactone (GBL), optional vinylene carbonate (VC) and a fifth component excluding EC PC GBL and VC, and satisfying $x = 15-50$, $y = 30-75$, $0 < z < 30$, $0 < w \leq 5$, and $0 < q \leq 5$ (x , y , z , w and q represent resp. proportions (volume %) of EC, PC, GBL, VC and the fifth component relative to the total volume of the solvent mixture). The battery has an electrode group containing the above electrolyte solution in a battery case.				
IC	ICM H01M010-40				
	ICS H01M004-02; H01M004-58				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy				

Technology)

ST secondary battery electrolyte nonaq solvent mixt content control

IT Battery electrolytes

Secondary batteries

(Li salt electrolyte solns. containing mixts. of various nonaq. solvents with controlled volume % for secondary batteries)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate

105-58-8, Diethyl carbonate 108-32-7, Propylene

carbonate 872-36-6, Vinylene carbonate 4427-92-3, Phenyl

ethylene carbonate 4427-96-7, Vinyl ethylene carbonate 14283-07-9,

Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate

132843-44-8

RL: DEV (Device component use); USES (Uses)

(Li salt electrolyte solns. containing mixts. of various nonaq. solvents with controlled volume % for secondary batteries)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; Li salt electrolyte solns. containing mixts. of various nonaq. solvents with controlled volume % for secondary batteries)

IT 12190-79-3D, Cobalt lithium oxide (CoLiO₂), Li deficient

RL: DEV (Device component use); USES (Uses)

(cathode; Li salt electrolyte solns. containing mixts. of various nonaq. solvents with controlled volume % for secondary batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

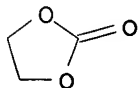
108-32-7, Propylene carbonate 872-36-6, Vinylene carbonate

RL: DEV (Device component use); USES (Uses)

(Li salt electrolyte solns. containing mixts. of various nonaq. solvents with controlled volume % for secondary batteries)

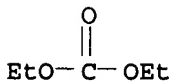
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



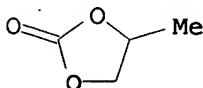
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



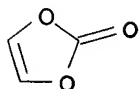
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (anode; Li salt electrolyte solns. containing mixts. of various
 nonaq. solvents with controlled volume % for secondary batteries
)
 RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 27 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:282878 HCAPLUS

DN 138:306812

TI Secondary nonaqueous electrolyte battery, power supply using the
 battery, portable device, transportable or movable machine,
 household electric appliance, and method for charging the battery
 IN Sato, Takaya; Banno, Kimiyo; Maruo, Tatsuya; Nozu, Ryutaro; Takagi,
 Kentaro

PA Nisshinbo Industries, Inc., Japan

SO PCT Int. Appl., 102 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003030292	A1	20030410	WO 2002-JP9972	20020926 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	JP 2004055509	A2	20040219	JP 2002-276778	20020924 <--
	EP 1471591	A1	20041027	EP 2002-768089	20020926 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	CN 1568558	A	20050119	CN 2002-820352	20020926 <--
	JP 2004342318	A2	20041202	JP 2003-80035	20030324 <--
	US 2004234865	A1	20041125	US 2004-490626	20040325 <--
PRAI	JP 2001-295869	A	20010927	<--	
	JP 2002-67300	A	20020312	<--	
	JP 2002-80986	A	20020322	<--	
	JP 2002-157191	A	20020530	<--	
	JP 2002-157259	A	20020530	<--	

WO 2002-JP9972 W 20020926 <--

JP 2003-77226 A 20030320 <--

AB The **battery** has a cathode, containing a Li-intercalating material and a polymer binder, an anode, a separator between the electrodes, and a nonaq. electrolyte solution, containing a Li salt and an organic solvent mixture;

where the electrolyte solution contains a material oxidized at the cathode at a cell voltage 4.1-5.2 V; and the oxidation reaction of the material at the cathode is different from the Li releasing reaction. The power supply comprises a plurality of the **batteries** connected in series or in parallel. The portable device, transportable or movable machine, or household elec. appliance is equipped with the above **battery**.

The method for charging the **battery** is carried out by varying specified charge pattern P (X, T) to P1(X1, T1) → P2(X2, T2)

→ P3(X3, T3) → ...

... → Pn(Xn, Tn) → Pn+1(Xn+1, Tn+1) [X =

ampere, $X \geq 0$ A; t = sec, t .++. 0; n = integer ≥ 1]; where the current values (X) in a series of the charge pattern P is different from each other.

IC ICM H01M010-40

ICS H01M002-16; H01M010-44

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery** structure electrolyte additive electrode oxidized material; **battery** charging method

IT Polyurethanes, uses

RL: DEV (Device component use); USES (Uses)

(cathode; structure of secondary lithium **batteries** containing electrode oxidized materials in electrolyte compns.)

IT Secondary **batteries**

(lithium; structure of secondary lithium **batteries** containing electrode oxidized materials in electrolyte compns.)

IT Polyolefins

RL: DEV (Device component use); USES (Uses)

(separator; structure of secondary lithium **batteries** containing electrode oxidized materials in electrolyte compns.)

IT **Battery** electrolytes

(structure of secondary lithium **batteries** containing electrode oxidized materials in electrolyte compns.)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; structure of secondary lithium **batteries** containing electrode oxidized materials in electrolyte compns.)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2)

RL: DEV (Device component use); USES (Uses)

(cathode; structure of secondary lithium **batteries** containing electrode oxidized materials in electrolyte compns.)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene

carbonate 872-36-6, Vinylene carbonate 9002-89-5D, Polyvinyl alcohol, derivative 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte; structure of secondary lithium **batteries** containing electrode oxidized materials in electrolyte compns.)

IT 3290-92-4, NK ester TMPT 25852-47-5, NK ester 9G 45103-58-0, NK ester M-20G

RL: MOA (Modifier or additive use); USES (Uses)

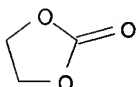
(electrolyte; structure of secondary lithium **batteries** containing electrode oxidized materials in electrolyte compns.)

IT 9004-34-6, Cellulose, uses

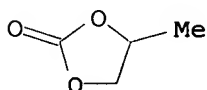
RL: DEV (Device component use); USES (Uses)
 (separator; structure of secondary lithium **batteries** containing
 electrode oxidized materials in electrolyte compns.)
 IT 105-58-8, Diethyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (structure of secondary lithium **batteries** containing electrode
 oxidized materials in **electrolyte** compns.)
 IT 25721-76-0, Polyethylene glycol dimethacrylate
 RL: MOA (Modifier or additive use); USES (Uses)
 (structure of secondary lithium **batteries** containing electrode
 oxidized materials in electrolyte compns.)
 IT 7782-42-5, **Graphite**, uses
 RL: DEV (Device component use); USES (Uses)
 (**anode**; structure of secondary lithium **batteries**
 containing electrode oxidized materials in electrolyte compns.)
 RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

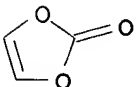
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene
 carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (**electrolyte**; structure of secondary lithium
batteries containing electrode oxidized materials in
electrolyte compns.)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

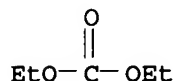


RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 105-58-8, Diethyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (structure of secondary lithium **batteries** containing electrode
 oxidized materials in **electrolyte** compns.)
 RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 28 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:173992 HCAPLUS

DN 138:224204

TI **Battery**IN Adachi, Momoe; Fujita, Shigeru; Endo, Takuya; Iwakoshi, Yasunobu;
Shibamoto, Goro

PA Sony Corporation, Japan

SO PCT Int. Appl., 162 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003019713	A1	20030306	WO 2002-JP8498	20020823 <--
	W: CN, JP, KR, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
	EP 1443584	A1	20040804	EP 2002-762828	20020823 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR, BG, CZ, EE, SK				
	CN 1557036	A	20041222	CN 2002-818384	20020823 <--
	CN 1770542	A	20060510	CN 2005-10113835	20020823 <--
	CN 1770543	A	20060510	CN 2005-10113836	20020823 <--
	US 2004234853	A1	20041125	US 2004-486635	20040211 <--
PRAI	JP 2001-254547	A	20010824	<--	
	CN 2002-818384	A3	20020823	<--	
	WO 2002-JP8498	W	20020823	<--	

AB The **battery** has a cathode, containing a Li composite oxide active mass having Li and/or Ni and O, an anode containing a Li intercalating material and/or Li in its active mass, and an electrolyte-impregnated separator in between; where the **battery** has charging voltage ≥ 4.25 V, and a total amount of Li carbonate and Li sulfate is 1.0 mass % of the cathode active mass. Preferably, the electrolyte has the concentration of a proton impurity ≤ 20 ppm and water ≤ 20 ppm.

IC ICM H01M010-40

ICS H01M004-02; H01M004-58; H01M004-40; H01M004-38

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)ST secondary lithium **battery** structure high charging voltage energy dIT Secondary **batteries**

(lithium; secondary lithium **batteries** containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li₂CO₃ and Li₂SO₄)

IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 12668-36-9

RL: DEV (Device component use); USES (Uses)

(anode; secondary lithium **batteries** containing

electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li_2CO_3 and Li_2SO_4)

IT 12190-79-3, Cobalt lithium oxide (CoLiO_2)
 RL: DEV (Device component use); USES (Uses)
 (cathode; secondary lithium **batteries** containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li_2CO_3 and Li_2SO_4)

IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6 132843-44-8
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; secondary lithium **batteries** containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li_2CO_3 and Li_2SO_4)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate 12031-65-1, Lithium nickel oxide (LiNiO_2) 113066-92-5, Cobalt lithium nickel oxide ($\text{Co}_0.9\text{LiNi}_0.1\text{O}_2$) 118557-79-2, Cobalt iron lithium oxide ($\text{Co}_0.9\text{Fe}_0.1\text{LiO}_2$) 128975-24-6, Lithium manganese nickel oxide ($\text{LiMn}_0.5\text{Ni}_0.5\text{O}_2$) 185746-84-3, Aluminum lithium magnesium nickel oxide ($\text{Al}_0.05\text{LiMg}_0.05\text{Ni}_0.9\text{O}_2$) 202916-35-6, Chromium cobalt lithium nickel oxide ($\text{Cr}_0.05\text{Co}_0.2\text{LiNi}_0.75\text{O}_2$) 287718-97-2, Aluminum lithium manganese nickel oxide ($\text{Al}_0.05\text{LiMn}_0.05\text{Ni}_0.9\text{O}_2$) 346417-97-8, Cobalt lithium manganese nickel oxide ($\text{Co}_0.33\text{LiMn}_0.33\text{Ni}_0.33\text{O}_2$) 364589-12-8, Aluminum cobalt lithium titanium oxide ($\text{Al}_0.05\text{Co}_0.9\text{LiTi}_0.05\text{O}_2$) 475637-37-7, Aluminum cobalt lithium nickel oxide ($\text{Al}_0.05\text{Co}_0.8\text{LiNi}_0.15\text{O}_2$) 478814-69-6, Aluminum cobalt lithium magnesium oxide ($\text{Al}_0.05\text{Co}_0.9\text{LiMg}_0.05\text{O}_2$) 500867-92-5, Cobalt lithium magnesium manganese oxide ($\text{Co}_0.8\text{LiMg}_0.05\text{Mn}_0.15\text{O}_2$) 500867-93-6, Aluminum iron lithium nickel oxide ($\text{Al}_0.15\text{Fe}_0.05\text{LiNi}_0.8\text{O}_2$) 500867-94-7, Aluminum cobalt lithium nickel oxide ($\text{Al}_0.2\text{Co}_0.3\text{LiNi}_0.5\text{O}_2$) 500867-98-1, Cobalt lithium magnesium nickel oxide ($\text{Co}_0.45\text{LiMg}_0.05\text{Ni}_0.5\text{O}_2$) 500867-99-2, Cobalt lithium nickel titanium oxide ($\text{Co}_0.35\text{LiNi}_0.6\text{Ti}_0.05\text{O}_2$) 500868-00-8, Cobalt iron lithium nickel oxide ($\text{Co}_0.25\text{Fe}_0.1\text{LiNi}_0.65\text{O}_2$) 500868-01-9 500868-02-0 500868-03-1 500868-04-2 500868-05-3 500868-09-7 500868-10-0 500868-11-1 500868-12-2
 RL: DEV (Device component use); USES (Uses)
 (secondary lithium **batteries** containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li_2CO_3 and Li_2SO_4)

IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (anode; secondary lithium **batteries** containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li_2CO_3 and Li_2SO_4)

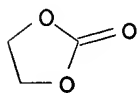
RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (secondary lithium **batteries** containing electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concentration of Li_2CO_3 and Li_2SO_4)

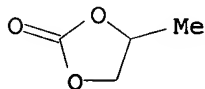
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



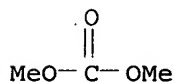
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



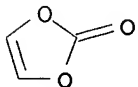
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 29 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:957970 HCAPLUS

DN 138:274019

TI 2-Vinylpyridine as film-forming additive to suppress the degradation of carbon anode by dissolved manganese for C/LiMn2O4 rechargeable battery

AU Komaba, Shinichi; Ohtsuka, Tatsuya; Kaplan, Benjamin; Itabashi, Tatsuya; Kumagai, Naoaki; Groult, Henri

CS Department of Chemical Engineering, Iwate University, Iwate, 020-8551, Japan

SO Chemistry Letters (2002), (12), 1236-1237

CODEN: CMLTAG; ISSN: 0366-7022

PB Chemical Society of Japan

DT Journal

LA English

AB For lithium-ion batteries of C/(spinel Li-Mn-O), the severe capacity loss occurs after storage of the battery at > 50°. This is mainly due to degradation of the carbon which was induced by electroredn. of Mn(II) dissolved from the spinel; this step is followed by the irreversible electrochem. reaction at the graphite/(Mn deposits)/electrolyte interface. However, 2-vinylpyridine as an additive into the electrolyte was capable of suppressing this degradation of

graphite anode, therefore, improved the **battery** performances. During the 1st charge, electropolymerization of 2-vinylpyridine from approx. 0.9 V vs. Li/Li⁺ resulted in film formation of poly(2-vinylpyridine) on the anode surface. The polymer protected the **graphite** from dissolved Mn(II).

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST vinylpyridine film additive carbon anode dissolved manganese rechargeable **battery**; secondary **battery** electropolymerization polyvinylpyridine **graphite anode** degradation inhibition

IT **Battery** anodes

Battery electrolytes

Cyclic voltammetry

(2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT Fluoropolymers, uses

RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(composite with **graphite**; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT Polymerization

(electrochem.; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT Decomposition

(inhibition of; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT Secondary **batteries**

(lithium; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT Reduction, electrochemical

(of 2-Vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT 7782-42-5, **Graphite**, uses

RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(composite with PVdF, **anode** base; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT 24937-79-9, Poly(vinylidene fluoride)

RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(composite with **graphite**; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT 872-36-6, Vinylene carbonate

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(**electrolyte** solution with ethylene and di-Et carbonate, lithium and manganese perchlorate, and 2-vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn²⁺ for C/LiMn₂O₄ secondary **battery**)

IT 100-69-6, 2-Vinylpyridine

RL: DEV (Device component use); MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(**electrolyte** solution with ethylene, di-Et, and vinylene carbonate, and

lithium and manganese perchlorate; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

IT 13770-16-6, Manganese(2+) perchlorate

RL: DEV (Device component use); USES (Uses)

(electrolyte solution with ethylene, vinylene, and di-Et carbonate, LiClO4, and 2-vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

IT 7791-03-9, Lithium perchlorate (LiClO4)

RL: DEV (Device component use); USES (Uses)

(electrolyte solution with ethylene, vinylene, and di-Et carbonates, manganese perchlorate, and 2-vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

IT 96-49-1, Ethylene carbonate

RL: DEV (Device component use); USES (Uses)

(electrolyte solution with lithium and manganese perchlorate, di-Et and vinylene carbonates, and 2-vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

IT 105-58-8, Diethyl carbonate

RL: DEV (Device component use); USES (Uses)

(electrolyte solution with lithium and manganese perchlorate, ethylene and vinylene carbonates, and 2-vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

IT 7439-93-2, Lithium, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(foil, reference and counter electrodes; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

IT 25014-15-7, Poly(2-vinylpyridine)

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)

(formed over graphite; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4)

RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(spinel, cathode; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(composite with PVdF, anode base; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

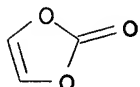
IT 872-36-6, Vinylene carbonate

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrolyte solution with ethylene and di-Et carbonate, lithium and manganese perchlorate, and 2-vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



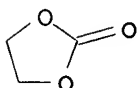
IT 96-49-1, Ethylene carbonate

RL: DEV (Device component use); USES (Uses)

(electrolyte solution with lithium and manganese perchlorate, di-Et and vinylene carbonates, and 2-vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



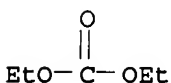
IT 105-58-8, Diethyl carbonate

RL: DEV (Device component use); USES (Uses)

(electrolyte solution with lithium and manganese perchlorate, ethylene and vinylene carbonates, and 2-vinylpyridine; 2-Vinylpyridine as film-forming additive to suppress degradation of carbon anode by dissolved Mn2+ for C/LiMn2O4 secondary battery)

RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 30 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:814518 HCAPLUS

DN 137:313536

TI Secondary polymer lithium battery

IN Nishimura, Naoto; Ui, Kouichi; Matsuda, Masako; Nishijima, Motoaki; Torata, Naoto

PA Sharp Kabushiki Kaisha, Japan

SO PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI WO 2002084775 A1 20021024 WO 2002-JP3638 20020411 <--
W: CN, IN, KR, US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE, TR
JP 2002313425 A2 20021025 JP 2001-114742 20010413 <--
EP 1381105 A1 20040114 EP 2002-717117 20020411 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, FI, CY, TR
CN 1526181 A 20040901 CN 2002-808197 20020411 <--
TW 543212 B 20030721 TW 2002-91107451 20020412 <--
US 2004126668 A1 20040701 US 2004-474333 20040224 <--
PRAI JP 2001-114742 A 20010413 <--
WO 2002-JP3638 W 20020411 <--

AB The **battery** has an **anode** containing amorphous C coated
graphite particles, a Li containing metal oxide cathode, and an
electrolyte layer containing a Li salt, an organic solvent, and a vinylene
carbonate polymer. The cathode active mass is selected from LiCoO₂,
LiNiO₂, LiMn₂O₄, and LiNi_{1-x}M_xO₂ (M = transition metal).

IC ICM H01M010-40

ICS H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

ST secondary lithium **battery** electrolyte vinylene carbonate
polymer; electrode compn secondary polymer electrolyte lithium
battery

IT **Battery anodes**

Pitch

(**anodes** from amorphous carbon coated **graphite**
particles for secondary lithium **batteries** with polymer
electrolytes)

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(**anodes** from amorphous carbon coated **graphite**
particles for secondary lithium **batteries** with polymer
electrolytes)

IT **Battery cathodes**

(cathodes for secondary lithium **batteries** with polymer
electrolytes)

IT **Battery electrolytes**

(compns. of polymer gel electrolytes containing vinylene carbonate polymers
for secondary lithium **batteries**)

IT Polyethers, uses

RL: DEV (Device component use); USES (Uses)

(hydroxy-containing, acrylate esters, copolymers with vinylene carbonate;
compns. of polymer electrolytes containing vinylene carbonate polymers for
secondary lithium **batteries**)

IT 7782-42-5, **Graphite**, uses

RL: DEV (Device component use); USES (Uses)

(**anodes** from amorphous carbon coated **graphite**
particles for secondary lithium **batteries** with polymer
electrolytes)

IT 12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium manganese
oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide (CoLiO₂) 113066-91-4,
Cobalt lithium nickel oxide (Co_{0.8}LiNi_{0.2}O₂)

RL: DEV (Device component use); USES (Uses)

(cathodes for secondary lithium **batteries** with polymer
electrolytes)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate

623-53-0, Ethyl methyl carbonate 872-36-6D, Vinylene
carbonate, copolymers with polyether polyol acrylates 13179-96-9,

1,4-Dimethoxybutane 14283-07-9, Lithium fluoroborate 21324-40-3,
Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(comps. of polymer **electrolytes** containing vinylene carbonate
polymers for secondary lithium **batteries**)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(**anodes** from amorphous carbon coated **graphite**
particles for secondary lithium **batteries** with polymer
electrolytes)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

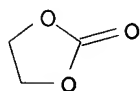
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl
carbonate 872-36-6D, Vinylene carbonate, copolymers with
polyether polyol acrylates

RL: DEV (Device component use); USES (Uses)

(comps. of polymer **electrolytes** containing vinylene carbonate
polymers for secondary lithium **batteries**)

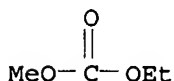
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



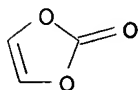
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 31 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:714437 HCAPLUS

DN 137:250263

TI Secondary light metal **battery**

IN Akashi, Hiroyuki

PA Sony Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.

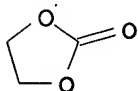
CODEN: JKXXAF

DT Patent

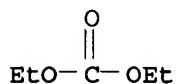
LA Japanese

FAN.CNT 1

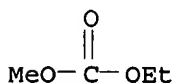
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002270227	A2	20020920	JP 2001-68816	20010312 <--
PRAI	JP 2001-68816		20010312 <--		
AB	The battery uses a light metal intercalating and depositing anode and an electrolyte solution, where the electrolyte is an As containing compound The anode may be a carbonaceous material or a metal, semiconductor, or alloy capable of alloying with the light metal, which is preferably Li.				
IC	ICM H01M010-40 ICS H01M004-02; H01M004-38; H01M004-58				
CC	52-2 (Electrochemical , Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery intercalation deposition anode;				
IT	Battery electrolytes (electrolyte solns. containing arsenic compound for secondary lithium batteries with intercalation and deposition anodes)				
IT	Battery anodes (lithium intercalation and deposition anodes in secondary lithium batteries with arsenic compound containing electrolyte solns.)				
IT	Secondary batteries (lithium; secondary lithium batteries with arsenic compound containing electrolyte solns. and lithium intercalation and deposition anodes)				
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate RL: DEV (Device component use); USES (Uses) (electrolyte solns. containing arsenic compound for secondary lithium batteries with intercalation and deposition anodes)				
IT	7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-42-8, Boron, uses 7440-43-9, Cadmium, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-58-6, Hafnium, uses 7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses 7782-42-5, Graphite , uses RL: DEV (Device component use); USES (Uses) (lithium intercalation and deposition anodes in secondary lithium batteries with arsenic compound containing electrolyte solns.)				
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate RL: DEV (Device component use); USES (Uses) (electrolyte solns. containing arsenic compound for secondary lithium batteries with intercalation and deposition anodes)				
RN	96-49-1 HCAPLUS				
CN	1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)				



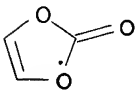
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(lithium intercalation and deposition anodes in secondary
lithium batteries with arsenic compound containing electrolyte
solns.)
RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

L23 ANSWER 32 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:149629 HCAPLUS
DN 137:157093
TI On the use of vinylene carbonate (VC) as an additive to electrolyte
solutions for Li-ion batteries
AU Aurbach, D.; Gamolsky, K.; Markovsky, B.; Gofer, Y.; Schmidt, M.; Heider,
U.
CS Department of Chemistry, Bar-Ilan University, Ramat-Gan, 52900, Israel
SO Electrochimica Acta (2002), 47(9), 1423-1439
CODEN: ELCAAV; ISSN: 0013-4686
PB Elsevier Science Ltd.
DT Journal
LA English
AB Vinylene carbonate (I) was tested as an additive to electrolyte solns. for

Li-ion batteries. For the model electrodes, synthetic graphite was chosen as the anode material, while LiMn2O4 spinel and LiNiO2 were chosen as the cathode materials. The test solution was 1 M LiAsF6 in a 1:1 mixture of ethylene and di-Me carbonates. Cyclic voltammetry, chronopotentiometry, impedance spectroscopy, electrochem. quartz crystal microbalance, FTIR and x-ray photoelectron spectroscopies were used in this study. I is a reactive additive that reacts on both the anode and the cathode surfaces. The influence of this additive on the behavior of Li-graphite anodes is very pos., since it improves their cycling performance, especially at elevated temps., and reduces the irreversible capacity. The spectroscopic studies indicate that I polymerizes on the lithiated graphite surfaces, thus forming poly alkyl Li-carbonate species that suppress both solvent and salt anion reduction. The presence of I in solns. reduces the impedance of the LiMn2O4 and LiNiO2 cathodes at room temperature. However, we have not yet found any pronounced impact of I on the cycling behavior of the cathodes, either at room temperature or at elevated temps. Thus, I can be considered as a

desirable

additive for the anode side in Li-ion batteries, one which has no adverse effect on the cathode side.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 72

ST vinylene carbonate lithium battery electrolyte

IT Battery electrolytes

(vinylene carbonate as additive for electrolyte solns. for rechargeable lithium batteries)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; vinylene carbonate as additive for electrolyte solns. for rechargeable lithium batteries)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate

872-36-6, Vinylene carbonate 29935-35-1, Lithium hexafluoroarsenate

RL: TEM (Technical or engineered material use); USES (Uses)

(battery electrolyte containing; vinylene carbonate as additive for electrolyte solns. for rechargeable lithium batteries)

IT 12031-65-1, Lithium nickel oxide (LiNiO2)

RL: DEV (Device component use); USES (Uses)

(cathodes containing; vinylene carbonate as additive for electrolyte solns. for rechargeable lithium batteries)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4)

RL: DEV (Device component use); USES (Uses)

(spinel, cathodes containing; vinylene carbonate as additive for electrolyte solns. for rechargeable lithium batteries)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; vinylene carbonate as additive for electrolyte solns. for rechargeable lithium batteries)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate

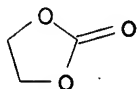
872-36-6, Vinylene carbonate

RL: TEM (Technical or engineered material use); USES (Uses)

(battery electrolyte containing; vinylene carbonate as additive for electrolyte solns. for rechargeable lithium batteries)

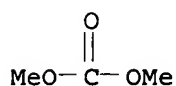
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



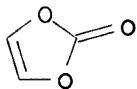
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 33 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:69633 HCAPLUS

DN 136:105189

TI Secondary nonaqueous electrolyte battery and its manufacture

IN Kato, Kiyomi; Murai, Hiroyuki; Kitagawa, Masaki; Inaba, Yukishige; Tanba, Yukimasa

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

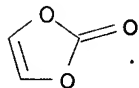
LA Japanese

FAN.CNT 1

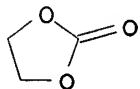
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002025612	A2	20020125	JP 2000-206470	20000707 <--
PRAI	JP 2000-206470		20000707 <--		

AB The battery has a Li transition metal oxide cathode, a Li intercalating graphite anode, and a nonaq. electrolyte solution containing 5-5000 ppm vinylene carbonate and/or its derivative; and are prepared by injecting an electrolyte solution containing 0.5-10% vinylene carbonate and/or its derivative to the battery, repeatedly charge and discharge the battery, and resting the charged battery until the vinylene carbonate and/or its derivative concentration drops to required level.

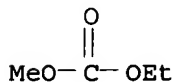
IC ICM H01M010-40
ICS H01M004-58
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST secondary lithium **battery** electrolyte vinylene carbonate
IT **Battery** electrolytes
(electrolyte solns. containing controlled amount of vinylene carbonate derivs. for secondary lithium **batteries**)
IT 872-36-6, Vinylene carbonate
RL: MSC (Miscellaneous)
(manufacture of secondary lithium **batteries** with **electrolyte** solns. containing controlled amount of vinylene carbonate)
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(manufacture of secondary lithium **batteries** with **electrolyte** solns. containing controlled amount of vinylene carbonate derivs.)
IT 872-36-6, Vinylene carbonate
RL: MSC (Miscellaneous)
(manufacture of secondary lithium **batteries** with **electrolyte** solns. containing controlled amount of vinylene carbonate)
RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
RL: DEV (Device component use); USES (Uses)
(manufacture of secondary lithium **batteries** with **electrolyte** solns. containing controlled amount of vinylene carbonate derivs.)
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



L23 ANSWER 34 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:847740 HCAPLUS

DN 136:9008
 TI Method for initial charging secondary nonaqueous electrolyte
battery
 IN Shibuya, Mashio; Hara, Tomitato; Suzuki, Yusuke; Kita, Akinori
 PA Sony Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 20 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001325988	A2	20011122	JP 2000-144042	20000516 <--
	CN 1323076	A	20011121	CN 2001-122065	20010516 <--
	US 2002034678	A1	20020321	US 2001-859058	20010516 <--
	CN 1641924	A	20050720	CN 2005-10004277	20010516 <--
PRAI	JP 2000-144042	A	20000516	<--	

AB The **battery**, using an electrolyte solvent mixture containing a main solvent ≥ 1 auxiliary solvent having reduction potential higher than that of the main solvent, is initially charged by a 2-step charging, where the anode potential during the 1st step is controlled at a level capable of reducing the auxiliary solvent but not the main solvent.

IC ICM H01M010-40

ICS H01M010-40; H01M004-58; H01M010-44

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST anode potential control secondary **battery** initial charge;
 solvent redn secondary **battery** initial charge anode potential

IT Fluoropolymers, uses

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(controlled anode potential in initial charging of secondary lithium **batteries** containing mixed electrolyte solvents)

IT Secondary **batteries**

(lithium; controlled anode potential in initial charging of secondary lithium **batteries** containing mixed electrolyte solvents)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 623-53-0, Ethyl methyl

carbonate 872-36-6, Vinylene carbonate 7782-42-5,

Graphite, uses 24937-79-9, Poly(vinylidene fluoride)

25014-41-9, Polyacrylonitrile 25067-61-2, Polymethacrylonitrile

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(controlled anode potential in initial charging of secondary lithium **batteries** containing mixed electrolyte solvents)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 623-53-0, Ethyl methyl

carbonate 872-36-6, Vinylene carbonate 7782-42-5,

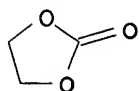
Graphite, uses

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

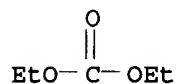
(controlled anode potential in initial charging of secondary lithium **batteries** containing mixed electrolyte solvents)

RN 96-49-1 HCAPLUS

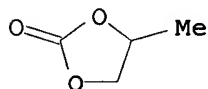
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



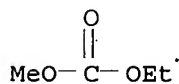
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



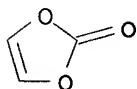
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



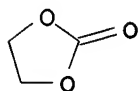
RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

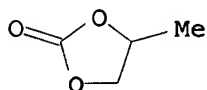
L23 ANSWER 35 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:781303 HCAPLUS
DN 135:320541
TI Nonaqueous electrolyte solutions and secondary lithium **batteries**
IN Hamamoto, Toshikazu; Ueki, Akira; Abe, Koji; Takai, Tsutomu
PA Ube Industries, Ltd., Japan
SO PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DT Patent
LA Japanese

FAN.CNT 1

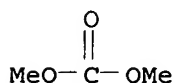
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001080345	A1	20011025	WO 2001-JP3270	20010417 <--
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	AU 2001046929	A5	20011030	AU 2001-46929	20010417 <--
	US 2001044051	A1	20011122	US 2001-836942	20010417 <--
	US 6656642	B2	20031202		
	JP 2002008721	A2	20020111	JP 2001-118631	20010417 <--
	TW 486838	B	20020511	TW 2001-90109342	20010417 <--
	CA 2406193	AA	20021016	CA 2001-2406193	20010417 <--
	EP 1280220	A1	20030129	EP 2001-919973	20010417 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	HK 1056439	A1	20060428	HK 2003-108666	20031127 <--
PRAI	JP 2000-115111	A	20000417	<--	
	WO 2001-JP3270	W	20010417	<--	
AB	The electrolyte solns. contain an electrolyte dissolved in a nonaq. solvent mixture containing cyclic carbonate, linear carbonate, and vinylene carbonate and have a redox potential ≤ 1 V vs. Li. Secondary Li batteries have the above electrolyte solution, a cathode, and an anode composed of graphite having $d_{002} \leq 0.34$ nm.				
IC	ICM H01M010-40.				
	ICS H01M004-58; H01M004-02				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery electrolyte solvent mixt; lithium battery electrolyte carbonate ester solvent mixt; redox potential carbonate ester solvent mixt battery electrolyte				
IT	Battery electrolytes				
	Redox potential				
	(carbonate ester solvent mixts. with controlled redox potential for secondary lithium battery electrolyte solns.)				
IT	96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate 21324-40-3, Lithium hexafluorophosphate				
	RL: DEV (Device component use); PRP (Properties); USES (Uses)				
	(carbonate ester solvent mixts. with controlled redox potential for secondary lithium battery electrolyte solns.)				
IT	96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate				
	RL: DEV (Device component use); PRP (Properties); USES (Uses)				
	(carbonate ester solvent mixts. with controlled redox potential for secondary lithium battery electrolyte solns.)				
RN	96-49-1 HCAPLUS				
CN	1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)				



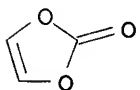
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 36 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:401580 HCAPLUS
DN 133:46224
TI Low-temperature secondary lithium battery
IN Herreyre, Sylvie; Biensan, Philippe; Pertont, Françoise; Barusseau, Sylvie
PA Alcatel, Fr.
SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1009057	A1	20000614	EP 1999-403085	19991209 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	FR 2787243	A1	20000616	FR 1998-15576	19981210 <--
	FR 2787243	B1	20031003		
	US 2001019800	A1	20010906	US 1998-222699	19981229 <--
	US 6399255	B2	20020604		
	JP 2000182670	A2	20000630	JP 1999-350163	19991209 <--
PRAI	FR 1998-15576	A	19981210	<--	
AB	The lithium battery for use at ≤-20°C comprises an electrolyte containing a Li salt dissolved in a nonaq. solvent, ≥1				

cathode, and ≥ 1 anode containing a F-free polymer binder and carbon for electrochem. intercalation of Li ions. The electrolyte solvent contains a saturated cyclic carbonate, e.g., ethylene carbonate, propylene carbonate or butylene carbonate; an unsatd. cyclic carbonate, e.g., vinylidene carbonate or propylidene carbonate; and a linear ester of a saturated monocarboxylic acid, e.g., Et acetate. The binder contains a rubber, e.g., acrylonitrile-butadiene copolymer or butadiene-styrene copolymer; a cellulose derivative, e.g., CM-cellulose; and an acrylic polymer.

IC ICM H01M010-40
ICS H01M004-62

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 39

ST secondary lithium **battery** low temp

IT Acrylic polymers, uses
Nitrile rubber, uses
Styrene-butadiene rubber, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(binders; low-temperature secondary lithium **battery**)

IT Secondary **batteries**
(lithium; low-temperature secondary lithium **battery**)

IT **Battery** electrodes
Battery electrolytes
(low-temperature secondary lithium **battery**)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(anode; low-temperature secondary lithium **battery**)

IT 9003-01-4, Polyacrylic acid 9004-32-4, Carboxymethylcellulose
9004-34-6D, Cellulose, derivs., uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(binder; low-temperature secondary lithium **battery**)

IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(cathode; low-temperature secondary lithium **battery**)

IT 12031-65-1, Lithium nickel oxide (LiNiO₂)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(doped, cathode; low-temperature secondary lithium **battery**)

IT 64-19-7D, Acetic acid, esters, uses 79-09-4D, Propanoic acid, esters, uses 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-92-6D, Butanoic acid, esters, uses 108-32-7, Propylene carbonate 141-78-6, Acetic acid ethyl ester, uses 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate 623-53-0, Methyl ethyl carbonate 872-36-6, 1,3-Dioxol-2-one 4437-85-8, Butylene carbonate 56525-42-9, Methyl propyl carbonate 275354-10-4, 4H-1,3-Dioxin-2-one 275354-11-5 275354-12-6
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(electrolyte; low-temperature secondary lithium **battery**)

IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(foil; low-temperature secondary lithium **battery**)

IT 9003-18-3
RL: NUU (Other use, unclassified); TEM (Technical or engineered material

use); USES (Uses)
(nitrile rubber, binders; low-temperature secondary lithium battery)

IT 9003-55-8
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, binders; low-temperature secondary lithium battery)

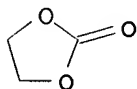
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(anode; low-temperature secondary lithium battery)

RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

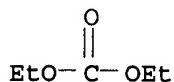
C

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 872-36-6, 1,3-Dioxol-2-one 4437-85-8, Butylene carbonate 56525-42-9, Methyl propyl carbonate
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(electrolyte; low-temperature secondary lithium battery)

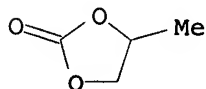
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



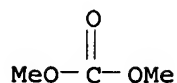
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



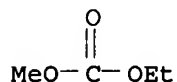
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



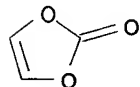
RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



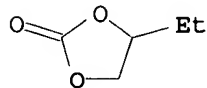
RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



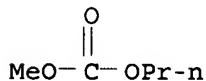
RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



RN 56525-42-9 HCAPLUS
 CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 37 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2000:317254 HCAPLUS
 DN 132:323944
 TI Nonaqueous electrolytes comprising carbonate solvents and secondary lithium **batteries**
 IN Hamamoto, Shunichi; Ueki, Akira; Abe, Hiroshi; Takai, Tsutomu
 PA Ube Industries, Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000138071	A2	20000516	JP 1999-55210	19990303 <--

	JP 3438636	B2	20030818		
	US 6413678	B1	20020702	US 1999-458274	19991209 <--
	US 2002168576	A1	20021114	US 2002-109943	20020329 <--
	US 6699998	B2	20040302		
PRAI	JP 1998-241388	A	19980827	<--	
	JP 1999-55210	A	19990303	<--	
	US 1999-458274	A3	19991209	<--	

AB The electrolytes contain cyclic carbonate, linear carbonate, and vinylene carbonate of ≤ 100 ppm Cl. Secondary lithium **batteries** comprising cathodes, **graphite anodes** having lattice plane width (d002) ≤ 0.34 nm, and the above stated electrolytes are also claimed. Manufacture of high purity vinylene carbonate, by dehydrochlorination of monochloroethylene carbonate in di-Bu carbonate solvent was demonstrated. **Battery** containing thus prepared high-purity vinylene carbonate in its electrolyte showed excellent charge-discharge characteristics.

IC ICM H01M010-40
ICS C07C069-96

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 28

ST lithium secondary **battery** nonaq electrolyte; electrolyte solvent carbonate blend secondary **battery**; chlorine free vinylene carbonate electrolyte solvent

IT Secondary **batteries**
(lithium; secondary lithium **batteries** with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT **Battery** electrolytes
(secondary lithium **batteries** with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT 7782-42-5, **Graphite**, uses
RL: DEV (Device component use); USES (Uses)
(**anode**; secondary lithium **batteries** with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
RL: DEV (Device component use); USES (Uses)
(cathode; secondary lithium **batteries** with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT 542-52-9, Dibutyl carbonate
RL: NUU (Other use, unclassified); USES (Uses)
(dehydrochlorination of monochloroethylene carbonate in; secondary lithium **batteries** with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT 3967-54-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(dehydrochlorination of; secondary lithium **batteries** with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT 872-36-6P, Vinylene carbonate
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(high-purity; secondary lithium **batteries** with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate
RL: DEV (Device component use); USES (Uses)
(secondary lithium **batteries** with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT 7782-50-5, Chlorine, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)

(vinylene carbonate with controlled content of; secondary lithium batteries with carbonate electrolyte solvents containing high-purity vinylene carbonate)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; secondary lithium batteries with carbonate electrolyte solvents containing high-purity vinylene carbonate)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

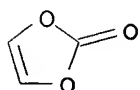
IT 872-36-6P, Vinylene carbonate

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)

(high-purity; secondary lithium batteries with carbonate electrolyte solvents containing high-purity vinylene carbonate)

RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

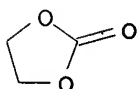
108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate

RL: DEV (Device component use); USES (Uses)

(secondary lithium batteries with carbonate electrolyte solvents containing high-purity vinylene carbonate)

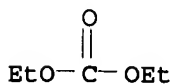
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



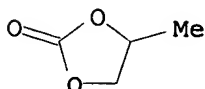
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

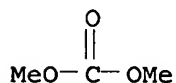


RN 108-32-7 HCAPLUS

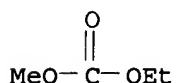
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



L23 ANSWER 38 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:274708 HCAPLUS

DN 132:281650

TI Secondary nonaqueous electrolyte **batteries**

IN Kita, Fusaji; Iwasaki, Minako; Ishikawa, Yuki; Matsumoto, Kazunobu; Abe, Hiroshi; Takai, Tsutomu; Hamamoto, Shunichi

PA Hitachi Maxell, Ltd., Japan; Ube Industries, Ltd.

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000123867	A2	20000428	JP 1998-297465	19981020 <--
PRAI	JP 1998-297465		19981020 <--		

AB The **batteries** use cathode active mass having a 4-V grade potential, an electrode-separator stack having discharge capacity ≥ 130 mA.h/cm³, and an electrolyte solution containing a cyclic ester having C:C double bond in the ring. The anode is preferably a carbonaceous material, having interplanar spacing $d_{002} \leq 3.5\text{\AA}$ and unit cell length $L_c \geq 30\text{\AA}$, and the anode active mass layer has a $d. \geq 1.45$ g/cm³.

IC ICM H01M010-40

ICS H01M004-02

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST **battery** nonaq electrolyte unsatd cyclic ester

IT **Battery** electrolytes

(electrolyte solns. containing unsatd. cyclic esters for secondary lithium **batteries**)

IT 7782-42-5, **Graphite**, uses

RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (characteristics of **graphite anodes** for lithium

batteries with electrolyte solns. containing unsatd. cyclic esters)

IT 91-64-5, Coumarin 96-49-1, Ethylene carbonate 623-53-0

, Ethyl methyl carbonate 872-36-6, Vinylene carbonate

21324-40-3, Lithium hexafluorophosphate

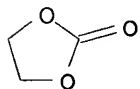
RL: DEV (Device component use); USES (Uses)

(**electrolyte** solns. containing unsatd. cyclic esters for

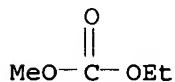
secondary lithium **batteries**)
 IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: DEV (Device component use); USES (Uses)
 (lithium cobaltate cathodes for lithium **batteries** with
 electrolyte solns. containing unsatd. cyclic esters)
 IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (characteristics of **graphite anodes** for lithium
batteries with electrolyte solns. containing unsatd. cyclic esters)
 RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

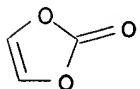
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl
 carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing unsatd. cyclic esters for
 secondary lithium **batteries**)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 39 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 1999:783394 HCAPLUS
 DN 132:13893
 TI Nonaqueous electrolyte solutions and secondary nonaqueous electrolyte
batteries
 IN Hinohara, Akio; Toriida, Masahiro; Tan, Hiroaki
 PA Mitsui Chemicals Inc., Japan
 SO Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese

FAN.CNT 1

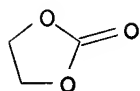
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11339851	A2	19991210	JP 1998-150420	19980529 <--
PRAI	JP 1998-150420		19980529	<--	
OS	MARPAT 132:13893				
AB	The electrolyte solns. have a Li containing electrolyte dissolved in a solvent mixture, which contains a vinylene carbonate derivative having H or C1-3 alkyl substituents, cyclic carbonate esters selected from C2-4 alkylene carbonates, and a carboxylate ester RCOOR' (R = H, C1-3 alkyl, MeO, EtO, PrO, i-PrO group; R' = C1-4 alkyl group); with the vinyl carbonate content controlled at 0.1-4 volume%. The batteries using the electrolyte solns. have Li intercalating carbonaceous anodes.				
IC	ICM H01M010-40				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery electrolyte vinylene carbonate deriv; lithium battery electrolyte vinylene carbonate deriv; carboxylate ester carbonate ester battery electrolyte				
IT	Battery electrolytes (nonaq. electrolyte solns. containing vinylene carbonate derivs for secondary lithium batteries)				
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); USES (Uses) (anodes for secondary lithium batteries using nonaq. electrolyte solns. containing vinylene carbonate derivs)				
IT	96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 623-53-0, Methyl ethyl carbonate 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte solns. containing vinylene carbonate derivs for secondary lithium batteries)				
IT	616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate 37830-90-3, Dimethylvinylene carbonate RL: MOA (Modifier or additive use); USES (Uses) (nonaq. electrolyte solns. containing vinylene carbonate derivs for secondary lithium batteries)				
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); USES (Uses) (anodes for secondary lithium batteries using nonaq. electrolyte solns. containing vinylene carbonate derivs)				
RN	7782-42-5 HCAPLUS				
CN	Graphite (8CI, 9CI) (CA INDEX NAME)				

C

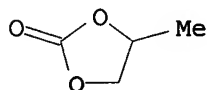
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 623-53-0, Methyl ethyl carbonate
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte solns. containing vinylene carbonate derivs for secondary lithium batteries)

RN 96-49-1 HCAPLUS

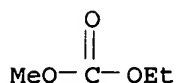
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



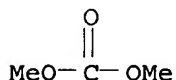
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



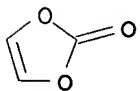
RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate
RL: MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte solns. containing vinylene carbonate derivs
for secondary lithium batteries)
RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 40 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:658701 HCAPLUS
DN 131:274248
TI Lithium ion batteries with mixed carbonate solvents
IN Takahashi, Masatoshi
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 11283667 A2 19991015 JP 1998-83777 19980330 <--
PRAI JP 1998-83777 19980330 <--
AB The battery, equipped with a cathode containing Li Mn oxides and an
anode containing graphitic carbon materials, comprises an electrolyte solvent
containing propylene carbonate and vinylene carbonate. The battery
has good high-temperature storage stability and is suppressed from decrease of
capacity.
IC ICM H01M010-40
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)
ST lithium ion battery electrolyte solvent; propylene vinylene
carbonate electrolyte solvent battery
IT Battery electrolytes
(electrolyte solvents containing propylene carbonate and vinylene carbonate
for lithium ion batteries)
IT Secondary batteries
(lithium; electrolyte solvents containing propylene carbonate and vinylene
carbonate for lithium ion batteries)
IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anodes; electrolyte solvents containing propylene carbonate and
vinylene carbonate for lithium ion batteries)
IT 12057-17-9, Lithium manganese oxide (LiMn2O4)
RL: DEV (Device component use); USES (Uses)
(cathodes; electrolyte solvents containing propylene carbonate and vinylene
carbonate for lithium ion batteries)
IT 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolytes; electrolyte solvents containing propylene carbonate and
vinylene carbonate for lithium ion batteries)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethylcarbonate
108-32-7, Propylene carbonate 872-36-6, Vinylene
carbonate
RL: DEV (Device component use); USES (Uses)
(solvents; electrolyte solvents containing propylene carbonate
and vinylene carbonate for lithium ion batteries)
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anodes; electrolyte solvents containing propylene carbonate and
vinylene carbonate for lithium ion batteries)
RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

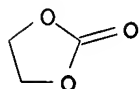
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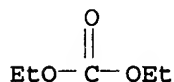
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IT 96-49-1, Ethylene carbonate 105-58-8, Diethylcarbonate
108-32-7, Propylene carbonate 872-36-6, Vinylene
carbonate
RL: DEV (Device component use); USES (Uses)
(solvents; electrolyte solvents containing propylene carbonate
and vinylene carbonate for lithium ion batteries)
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

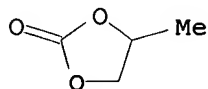
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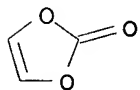
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



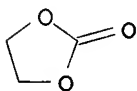
RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



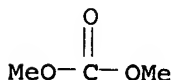
L23 ANSWER 41 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:75987 HCAPLUS
DN 128:143172
TI Carbonaceous electrode and compatible electrolyte solvent
IN Barker, Jeremy; Gao, Feng
PA Valence Technology, Inc., USA
SO U.S., 19 pp., Cont.-in-part of U.S. 5,643,695.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5712059	A	19980127	US 1996-740765	19961101 <--
	US 5660948	A	19970826	US 1995-533882	19950926 <--
	US 5643695	A	19970701	US 1996-630402	19960410 <--
PRAI	US 1995-533882	A2	19950926	<--	
	US 1996-630402	A2	19960410	<--	
AB	A battery comprises a 1st electrode, a counterelectrode which forms an electrochem. couple with the 1st electrode, and an electrolyte. The 1st electrode comprises graphite particles and the electrolyte comprises a solvent mixture and a solute. The solvent mixture comprises vinylene carbonate or its substituted derivs. and propylene carbonate.				
IC	ICM H01M010-40				
INCL	429197000				

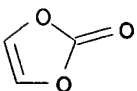
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST battery carbonaceous electrode vinylene propylene carbonate
 IT Battery anodes
 (carbonaceous electrode and compatible electrolyte solvent of propylene carbonate and vinylene carbonate)
 IT Carbonaceous materials (technological products)
 RL: DEV (Device component use); USES (Uses)
 (electrode and compatible electrolyte solvent of propylene carbonate and vinylene carbonate)
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (carbonaceous electrode and compatible electrolyte solvent of propylene carbonate and)
 IT 872-36-6D, Vinylene carbonate, derivs.
 RL: TEM (Technical or engineered material use); USES (Uses)
 (carbonaceous electrode and compatible electrolyte solvent of propylene carbonate and)
 IT 108-32-7, Propylene carbonate
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (carbonaceous electrode and compatible electrolyte solvent of vinylene carbonate and)
 IT 7782-42-5, Graphite, uses
 RL: DEV (Device component use); USES (Uses)
 (electrode and compatible electrolyte solvent of propylene carbonate and vinylene carbonate)
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (carbonaceous electrode and compatible electrolyte solvent of propylene carbonate and)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)

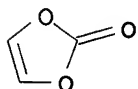


IT 872-36-6D, Vinylene carbonate, derivs.

RL: TEM (Technical or engineered material use); USES (Uses)
(carbonaceous electrode and compatible electrolyte solvent of
propylene carbonate and)

RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)

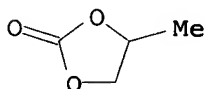


IT 108-32-7, Propylene carbonate

RL: DEV (Device component use); PRP (Properties); USES (Uses)
(carbonaceous electrode and compatible electrolyte solvent of
vinylene carbonate and)

RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)
(electrode and compatible electrolyte solvent of propylene
carbonate and vinylene carbonate)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

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RE.CNT 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 42 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1997:128062 HCAPLUS

DN 126:227644

TI Ion-conductive material for secondary battery

IN Fujimoto, Masahisa; Nishio, Koji; Saitoh, Toshihiko

PA Sanyo Electric Co., Ltd., Japan

SO U.S., 14 pp., Cont.-in-part of U.S. Ser. No. 134, 079, abandoned.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5601949	A	19970211	US 1995-466197	19950606 <--
	JP 06163080	A2	19940610	JP 1992-335660	19921119 <--
	US 5670275	A	19970923	US 1996-733529	19961018 <--
PRAI	JP 1992-335660	A	19921119	<--	
	US 1993-134079	B2	19931008	<--	
	US 1995-466197	A3	19950606	<--	

AB A secondary battery is comprised of a cathode of a material
intercalatable with alkaline earth metal ions, an anode of a C composition

intercalatable with those ions, and an electrolyte having an organic solvent and a solute, which includes an alkali earth metal salt. The organic solvent is selected from ethylene carbonate, di-Me carbonate, and vinylene carbonate. The C composition comprises coke, refined coke of $\geq 99\%$ purity, organic compound produced by pyrolyzing cellulose, **graphite**, or glassy C.

IC ICM H01M010-38

ICS H01M010-42

INCL 429218000

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST **battery** alk earth metal intercalatable electrode

IT **Battery** cathodes

(alkaline earth metal-intercalatable)

IT **Battery** anodes

(alkaline earth metal-intercalatable carbonaceous material)

IT Carbonaceous materials (technological products)

Coke

RL: TEM (Technical or engineered material use); USES (Uses)

(**battery** anodes from alkaline earth metal-intercalatable)

IT 7782-42-5, **Graphite**, uses

RL: DEV (Device component use); USES (Uses)

(**battery** anodes from alkaline earth metal-intercalatable)

IT 7440-44-0, Carbon, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(**battery** anodes from alkaline earth metal-intercalatable glassy)

IT 11081-91-7, Barium nickel oxide (BaNiO₃) 12020-51-8, Europium iron oxide (EuFeO₃) 12020-75-6, Europium iron oxide (Eu₃Fe₅O₁₂) 12022-69-4, Iron strontium oxide (FeSrO₃) 12023-73-3, Iron samarium oxide (Fe₅Sm₃O₁₂) 12031-12-8, Lanthanum manganese oxide (LaMnO₃) 12031-18-4, Lanthanum nickel oxide (LaNiO₃) 12230-58-9, Barium iron oxide (BaFeO₃) 12323-37-4, Calcium cobalt oxide (CaCo₂O₄) 12361-46-5, Europium manganese oxide (EuMnO₃) 12362-88-8, Manganese samarium oxide (MnSmO₃) 12524-96-8, Calcium iron oxide (CaFeO₃) 12764-51-1, Barium cobalt oxide (BaCoO₃) 12777-03-6, Nickel strontium oxide (NiSrO₃) 37249-69-7, Cobalt strontium oxide (CoSrO₃) 39449-41-7, Cobalt lanthanum oxide (CoLa₂O₄) 53801-03-9, Lanthanum manganese oxide (LaMn₇O₁₂) 67196-82-1, Calcium iron oxide (CaFeO₂) 116590-84-2, Lanthanum manganese oxide (LaMnO_{3.15}) 117058-53-4, Cobalt lanthanum nickel oxide (Co_{0.4}LaNi_{0.6}O₃) 118254-20-9, Barium europium nickel oxide (BaEu₂NiO₅) 156759-14-7, Lanthanum manganese oxide (LaMnO_{4.15}) 188250-37-5, Barium nickel samarium oxide (Ba₂NiSmO₅) 188250-45-5, Europium iron ytterbium oxide (Eu_{0.5}Fe₂Yb_{0.5}O₄) 188250-48-8, Lanthanum manganese oxide (La₄MnO₁₁)

RL: DEV (Device component use); USES (Uses)

(**battery** cathodes)

IT 12068-86-9, Iron magnesium oxide (Fe₂MgO₄) 12323-90-9, Cobalt magnesium oxide (Co₂MgO₄) 12377-81-0, Calcium cobalt oxide (Ca₃Co₂O₆) 12514-78-2, Calcium cobalt oxide (Ca₃Co₄O₉) 12589-48-9, Barium nickel oxide (BaNiO₂) 37249-71-1, Cobalt strontium oxide (Co₂Sr₂O₅) 67196-93-4, Magnesium nickel oxide (MgNiO₂) 107284-42-4, Cobalt strontium oxide (CoSrO_{2.8}) 156759-09-0, Barium cobalt oxide (BaCoO_{2.8}) 188250-50-2, Barium cobalt oxide (BaCoO₅) 188250-51-3, Calcium cobalt oxide (Ca₃Co₂O₅)

RL: TEM (Technical or engineered material use); USES (Uses)

(**battery** cathodes)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate

872-36-6, Vinylene carbonate

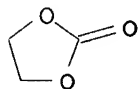
RL: DEV (Device component use); USES (Uses)

(**battery** electrolytes containing)

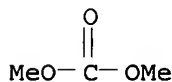
IT 13450-97-0, Strontium perchlorate 13465-95-7, Barium perchlorate
 13477-36-6, Calcium perchlorate 13498-08-3, Ytterbium perchlorate
 13537-22-9 13569-60-3, Samarium perchlorate 14017-46-0, Lanthanum
 perchlorate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. **battery** electrolytes containing)
 IT 7782-42-5, **Graphite**, uses
 RL: DEV (Device component use); USES (Uses)
 (**battery anodes** from alkaline earth
 metal-intercalatable)
 RN 7782-42-5 HCAPLUS
 CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

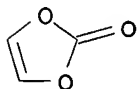
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (**battery electrolytes** containing)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



L23 ANSWER 43 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 1996:212232 HCAPLUS
 DN 124:237228
 TI Nonaqueous electrolyte secondary **batteries** with improved anodes
 and their manufacture
 IN Kida, Yoshinori; Yamazaki, Mikya; Nishio, Koji; Saito, Toshihiko
 PA Sanyo Electric Co, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08007886	A2	19960112	JP 1994-138944	19940621 <--
	JP 3192874	B2	20010730		
PRAI	JP 1994-138944		19940621 <--		

AB The **batteries** comprise Li-intercalating **anodes** containing mixts. of **graphite** and Li-containing metal oxides. The **batteries** may consist of anodes containing LiNbO₃, LiVO₃, LiTi₂O₄, Li₂TiO₃, and/or Li₂WO₄ and **graphite**, cathodes containing LiCoO₂, LiNiO₂, LiMn₂O₄, LiFeO₂, LiM₁xM₂yO_z (M₁-2 = transition metals), electrolyte solvents containing ethylene carbonate, butylene carbonate, vinylene carbonate, γ-butyrolactone, di-Me carbonate, di-Et carbonate, Me Et carbonate, dimethoxyethane, THF, dioxolan, 1,2-diethoxyethane, and solutes containing LiPF₆, LiCF₃SO₃, LiBF₄, LiAsF₆, LiClO₄. The manufacture comprises mixing Li-absorbed Li-containing metal oxides with **graphite** and heating to give the **anodes**. The **batteries** have long cycle life.

IC ICM H01M004-02
ICS H01M004-58; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **anode graphite** lithium metal oxide; **battery**
anode lithium mixed oxide

IT **Anodes**
(**battery**, **anodes** containing **graphite** and Li-containing metal oxides for **batteries** for cycle life)

IT 7782-42-5, **Graphite**, uses 12031-63-9, Lithium niobium oxide (LiNbO₃) 12031-82-2, Lithium titanium oxide (Li₂TiO₃) 13568-45-1, Lithium tungsten oxide (Li₂WO₄) 15060-59-0, Lithium vanadium oxide (LiVO₃) 37217-08-6, Lithium titanium oxide (LiTi₂O₄)
RL: DEV (Device component use); USES (Uses)
(**anode**; **anodes** containing **graphite** and Li-containing metal oxides for **batteries** for cycle life)

IT 12022-46-7, Lithium iron oxide (LiFeO₂) 12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12190-79-3, Lithium cobalt oxide (LiCoO₂)
RL: DEV (Device component use); USES (Uses)
(**cathode**; **anodes** containing **graphite** and Li-containing metal oxides for **batteries** for cycle life)

IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 100-79-8, Dioxolan 105-58-8, Diethyl carbonate 110-71-4 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 629-14-1, 1,2-Diethoxyethane 872-36-6, Vinylene carbonate 4437-85-8, Butylene carbonate
RL: DEV (Device component use); USES (Uses)
(**electrolyte solvent**; **anodes** containing **graphite** and Li-containing metal oxides for **batteries** for cycle life)

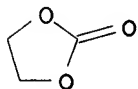
IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; **anodes** containing **graphite** and Li-containing metal oxides for **batteries** for cycle life)

IT 7782-42-5, **Graphite**, uses
RL: DEV (Device component use); USES (Uses)
(**anode**; **anodes** containing **graphite** and Li-containing metal oxides for **batteries** for cycle life)

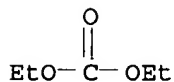
RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

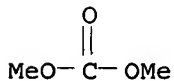
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl
carbonate 872-36-6, Vinylene carbonate 4437-85-8,
Butylene carbonate
RL: DEV (Device component use); USES (Uses)
(electrolyte solvent; anodes containing
graphite and Li-containing metal oxides for batteries for
cycle life)
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



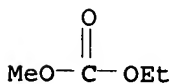
RN 105-58-8 HCAPLUS
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



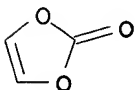
RN 616-38-6 HCAPLUS
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



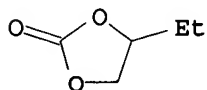
RN 623-53-0 HCAPLUS
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



L23 ANSWER 44 OF 44 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1995:305205 HCAPLUS

DN 122:60163

TI Secondary lithium **batteries** with expanded **graphite**
anodes

IN Kida, Yoshinori; Fujimoto, Masahisa; Nishio, Koji; Saito, Toshihiko

PA Sanyo Electric Co, Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

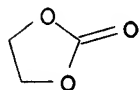
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 06275271	A2	19940930	JP 1993-84129	19930317 <--
PRAI	JP 1993-84129		19930317 <--		
AB	The batteries use expanded graphite for their anodes . Preferably, the graphite has interplanar spacing d002 3.363-3.366 Å and unit cell length Lc 170-230 Å. The battery electrolyte solvent is selected from ethylene carbonate, vinylene carbonate, or their mixture with Me2CO3..				
IC	ICM H01M004-58				
	ICS H01M004-02; H01M010-40				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	lithium battery anode expanded graphite				
IT	Battery electrolytes (solvents for lithium salt electrolytes in secondary lithium batteries with expanded graphite anodes)				
IT	Anodes (battery, secondary lithium batteries with expanded graphite anodes)				
IT	96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate				
	RL: DEV (Device component use); USES (Uses) (electrolyte solvents for secondary lithium batteries with expanded graphite anodes)				
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses) (expanded; secondary lithium batteries with expanded graphite anodes)				
IT	7439-93-2, Lithium, uses RL: DEV (Device component use); USES (Uses) (secondary lithium batteries with expanded graphite anodes)				
IT	96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate				
	RL: DEV (Device component use); USES (Uses) (electrolyte solvents for secondary lithium batteries)				

with expanded **graphite anodes**)

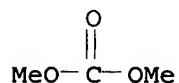
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



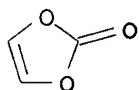
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT 7782-42-5, **Graphite**, uses

RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(expanded; secondary lithium **batteries** with expanded **graphite anodes**)

RN 7782-42-5 HCAPLUS

CN Graphite (8CI, 9CI) (CA INDEX NAME)

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